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volume 1, number 2 FALL 1987

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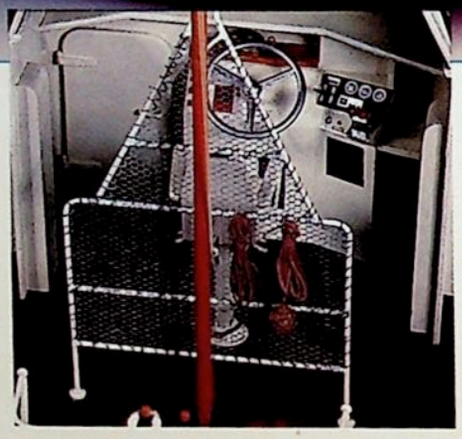

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U.S. BOAT & SHIP MODELER

FALL 1987

volume 1, number 2

Corporate Office: 898 West Sixteenth St., Newport Beach, CA 92663 Ph. (714) 645-8830

DEPARTMENTS

CAP'N'S LOG, Bill Northrop 6
THE MODEL SHIPWRIGHT, Milt Roth 10
INDUSTRY SCUTTLEBUTT, Ralph Warner 16
STRICTLY SAIL, Rod Carr 26
WATERLINES & CURRENTS, Fred Lehmberg 28
R/C POWER BOATING, Jerry Dunlap 31
RADIO WAVES, Eloy Marez 38
FRANK ADVICE FOR BEGINNERS, David Frank 54
SHIP'S STORE 64

FEATURES

PRODUCT SURVEYS:
MRP's MACH II, Jerry Dunlap 32
"KAAMMAHA," Harold "Mike" Striver 56

CONSTRUCTION

"MESSENGER," CHESAPEAKE BAY SHARPIE, Tim Miller 16
ELECTRIC SKI CRUISER, Jerry Dunlap 34
R/C STEAM POWERED LAUNCH, Kilburn Adams 40
AIRCRAFT CARRIER "SCORPIO," Graham Goodchild 48

COVER: MRP's MACH II, reviewed by Jerry Dunlap and wildly painted by Jim Burba, drives a wedge between Kilburn Adams' Steam Launch (above) and Tim Miller's "Messenger," a Chesapeake Bay "Sharpie."

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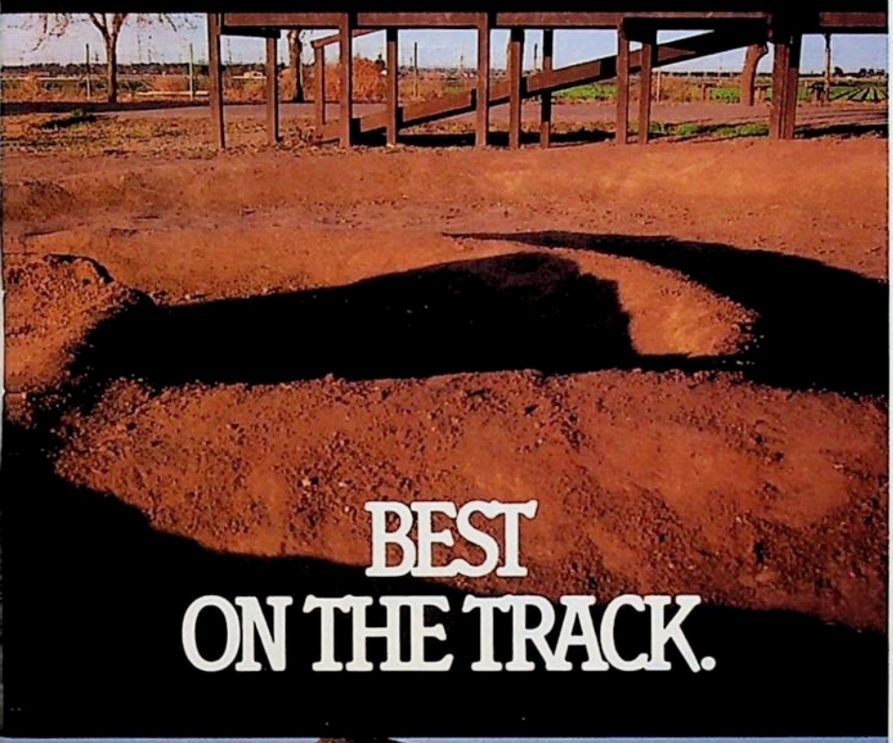

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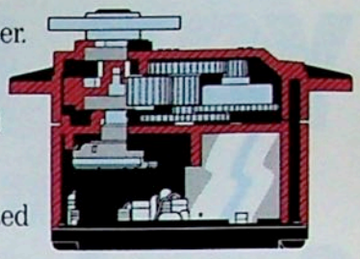

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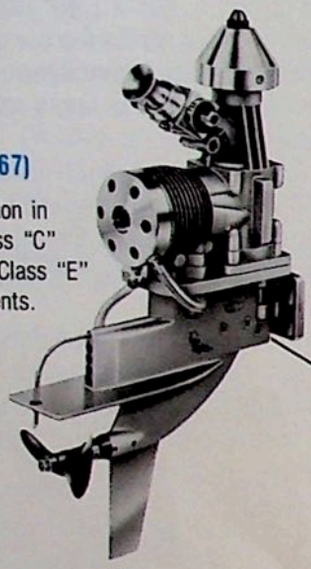

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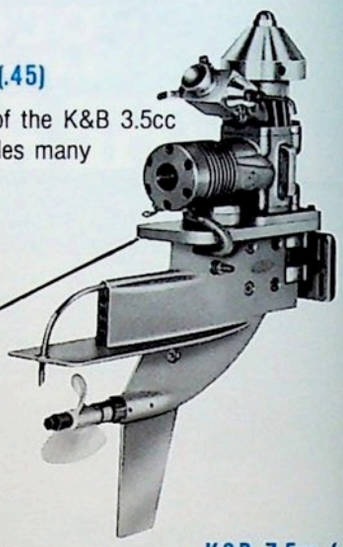

K&B 7.5cc (.45)

Big brother of the K&B 3.5cc it also includes many additional features.

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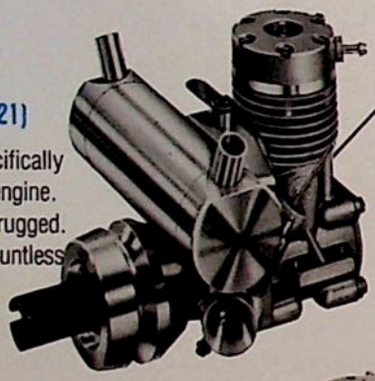
INBOARDS



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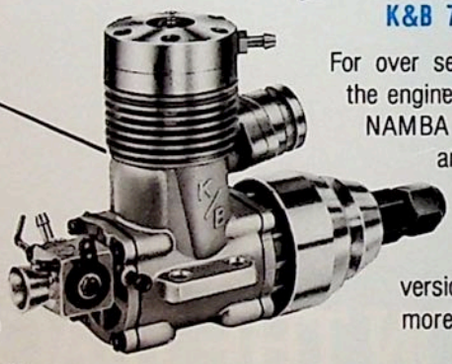

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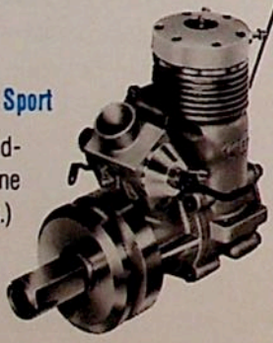

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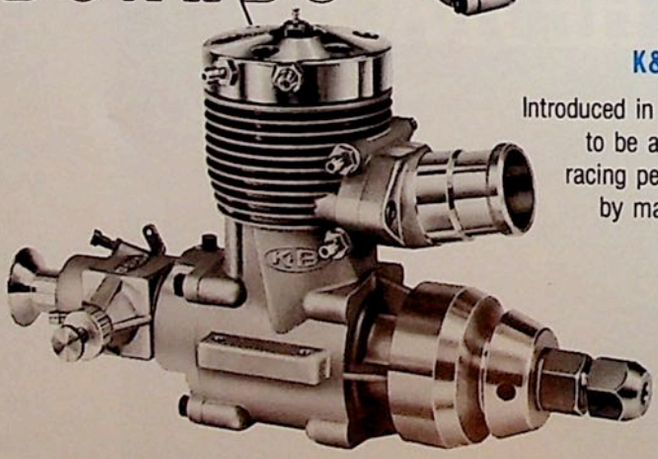

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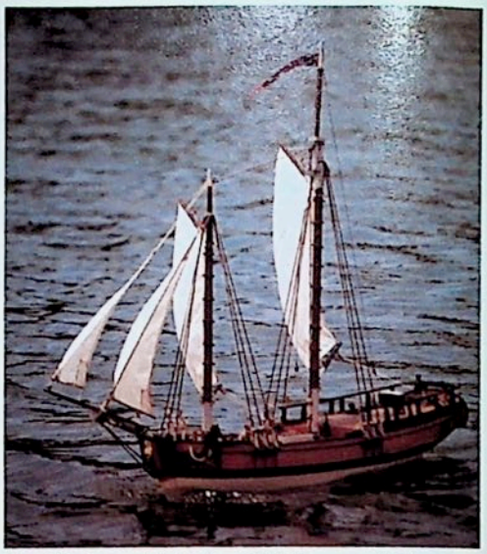
CAP'N'S LOG

By BILL NORTHROP . . .



The "Sultana," a Colonial Schooner (circa 1760) scratch-built and sailed by Tony Lovett, San Diego, on a fast downwind course during the San Diego Ship Modelers' Guild 1987 Regatta, June 20, Mission Bay.

Good grief! Where did all these boat and ship modelers come from? We sorta thought there were enough nautical modelers out there to warrant still another publication, especially as ours would reach a wide market base through our newsstand distribution, though we figured it would take a few issues to get the circulation cranking. WELL. . .as Jack Benny used to say, hand on chin, since the premier issue of *USBSM* hit the newsstands, our office has been bombarded with subscription orders, full-size plans orders, and just plain (thankfully) congratulatory letters on the content and the editorial direction we are taking with the magazine. If there are any regrets on our part in regard to starting this publication, it can only be that we didn't get off our respective stern quarters a lot sooner. It also appears certain that our publication schedule will soon have to be revised as to frequency.

Before going any further, we must clarify something about our cover logo, the subtitle that says, "The COMPLEAT Model Nautical Periodical." Yes, we purposely used the old English, or "Ye Olde English" spelling of the word "complete," it is not an error.

But speaking of errors, several readers were quick to point out that the three-masted sailing ship on Page 8 of the premier issue was incorrectly identified. It is actually a 1/24-scale model of the "Norske Love," a 100-gun Swedish vessel. I suggested to author Milt Roth that we cover the error by claiming that we misnamed it on purpose, to see if everyone was paying attention. He countered with the following. . ."I write to please everyone, including those who are looking for mistakes." Ya pays yer money and takes yer choice!

MAIL CALL

As mentioned in the first paragraph, we've had a heap of mail about *USBSM*, but we don't want to bore you with a bunch of testimonials on how great we are. Heck, we already *know* that! One reader, who obviously has been a longtime follower of our parent magazine, *Model Builder*, wrote in to warn us that if we continued to rerun certain articles previously published in *MB*, he wouldn't subscribe to *USBSM*. It is our opinion that we will undoubtedly reach modelers who, at some time in the

San Diego Ship Modelers' Guild member Albert L'Heureux scratch-built this magnificent model of the "Pacific Princess," better known to TV viewers as the "Love Boat." It won Best of Show and Modeler's Favorite at the June Regatta. PA system on board played TV theme song.

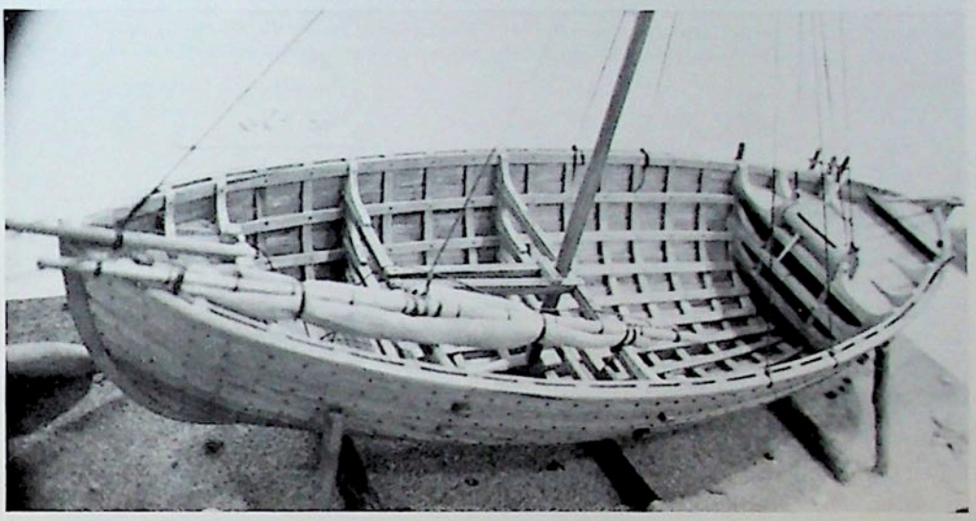
past, picked up copies of *MB* that featured a boat or ship construction article, or some article dealing with a subject that is especially boat-oriented. *Model Builder* has always been multifaceted, though the emphasis is model aircraft. However, we feel that the majority of our *USBSM* readers, because of this, more than likely missed the model boat articles that were published in *MB*, and therefore the articles deserve a second chance. The specific article this reader referred to was the Harbor Tug. Construction articles like that are timeless, and proof of that statement is the fact that since *USBSM* hit the newsstands, we have been swamped with orders for the tug plans. It appeared in *MB* 13 years ago!

So, I guess we've lost a subscriber, as this month, the "Steam Launch" and the "Electric Ski Cruiser," constitute reruns of construction articles from *MB*, published four years and two years ago respectively. We'll probably continue to pick up at least one previously published article, mostly of the construction type, until the supply is depleted. Take note of two things. One, we check the articles to update the text where necessary; i.e., cyanoacrylate glues were just barely becoming available to the hobby market at the time the Harbor Tug was first published, so we added that information to the new text. Secondly, newcomers to our publications may not be aware that we always include a reprint of the building instructions with every set of plans, just in case you don't have a copy of the issue in which the model appeared. Not so important now, but when a particular boat plan is ordered from a way back issue, the reprint may really come in handy!

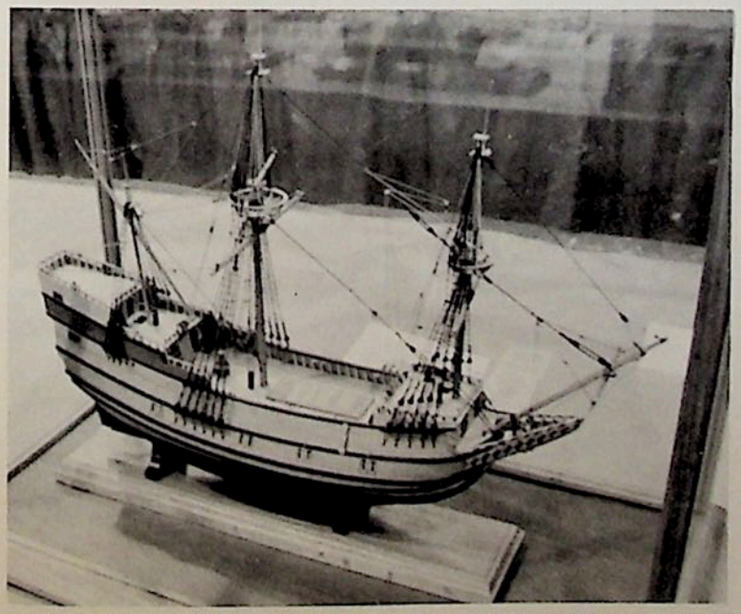
Another interesting letter came with an order for the Sport 40 Unlimited plans featured in the premier issue. The plans buyer builds both full size and model boats, and currently races a a 17-foot inboard hydro that he scratch-built from plans, and which he has run at speeds in excess of 100 mph! He intends to build a cab-over tunnel boat 18 feet in length, using a Chevy 350 engine, and base its design on the model! We hope he keeps in mind the scale effect going from full size to model and vice-versa, and immediately put him in touch with Jerry Dunlap and Dave Frank!

Bill Navin, from San Francisco writes, "I have enjoyed your premier

Our personal vote for most realistic model at San Diego was Bob Herrara's excursion steamer "Sabino". The 1908 vessel is still operating at Mystic Seaport, in Connecticut.

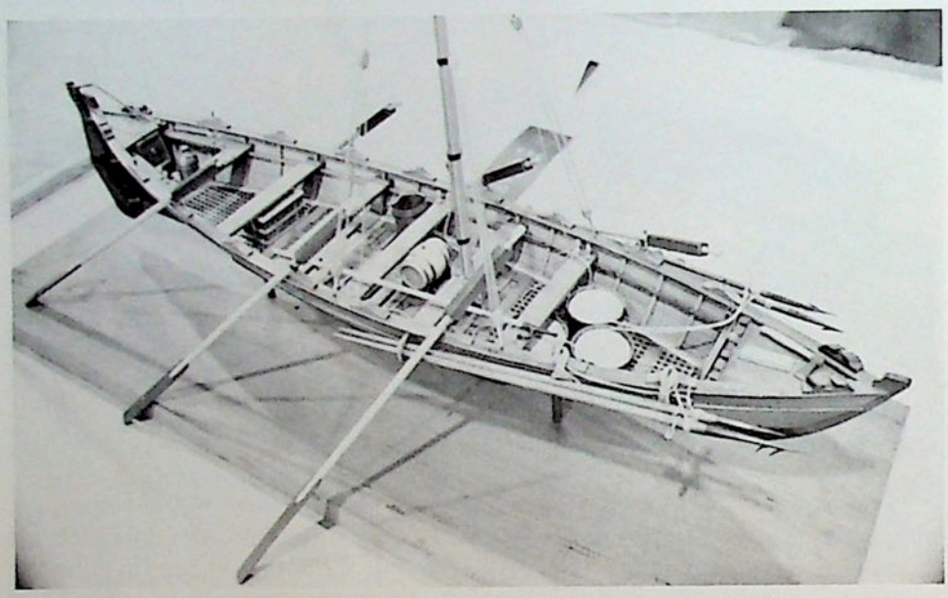


Henry Bridenbecker, Temple City, CA, showed his intricately constructed and detailed 13th Century Coaster at the Bellflower, CA Arts & Crafts Show, Simms Park. SMA member.



The "Mayflower" (left) and "Tholense Hoogars" (right) were constructed by Ship Modelers Association members Dick Roos, Tustin CA, and Henry Bridenbecker, respectively. Shooting photos through glass display cases was aided by Polaroid filter, which cut down reflective glare.

Mr. & Mrs. Dave Endert, Upland, CA, stroll along with their Tahiti Ketch "Spindrift." Close photo at right helps explain why it took 1st Place in Sail. We still have the March '72 *Mechanics Illustrated* in which it was featured in full size. Does anyone still have the MI large scale plans?



Back to Simms Park and another static display boat, a Whale Launch, by SMA member Jerry Magnuson of Santa Ana.

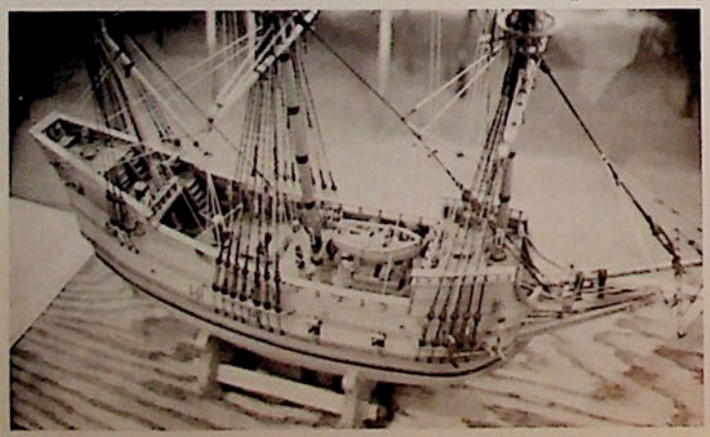
issue very much and look forward to future issues. I have built gas-powered boats in the past, but now my interest is directed to electric and steam engines, which I hope to build in the future as I now have a complete metal machine shop. In some future issue, could you have an article on steam engines for boats?"

No sooner said than done, Bill. Our "Waterlines & Currents" editor, Fred Lehmberg, will have an article on steam engines in the next (Winter) issue, and in this issue you will find two articles about steam-operated boats, one of which is a construction article (for the boat, that is, not a steam engine).

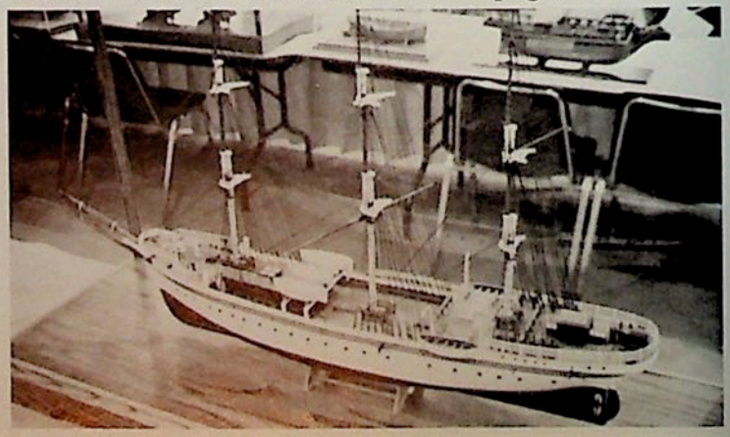
We have several letters from readers wanting to locate plans and/or kits for certain boats and ships. Ron Haralson, 647 West 5th St., #H, San Pedro, California 90731, is looking for a model he saw on display about 10 years ago. He doesn't remember the name, but it was a "slaver" with a planked hull, from a German kit with a name something like Steingraber. If the description or name rings a bell, drop Ron a postcard.

Ken Walker, 2535A Selwyn Rd., Victoria, B.C., Canada V9B 3L2, is looking for plans to build a working model of an SRN-6 Air Cushion Vehicle, as used by the Canadian Coast Guard. The only model hovercraft we have run across was a non-scale product by Adventure Modelcraft, P.O. Box 255, Youngstown, Ohio 45501. The company produced several different sizes of hovercraft. As with scale model aircraft, it's sometimes best to build and operate a non-scale model of the same configuration before going into the time and expense of a full-scale project.

Thomas Lourigan, 4661 Fountainhead Drive, Stone Mountain, Georgia 30083, purchased our Harbor Tug plans, but is also looking for plans for a Navy Fleet Ocean Tug of the "Cherokee" Class, large-funnel type, such as the USS Papago, ATF-160, or



That grainy wood base seems to be trying to steal the show from Bill Parkinson's fine model of the "Half Moon."



The "Sea Adler" was constructed by Bob Graham, another SMA member from Bellflower, CA.

the USS Salinan, ATF-161.

And William E. Miles, 11520 Terracina Blvd., Redlands, California 92373, wants to know if anyone is making models of the old Chris Craft, or boats such as the Century Sea Maid or Cobra. We know that Sterling is planning to reproduce its kit of the Century Sea Maid some time in the future. If others of this runabout-type are available, we'd like to hear about it too.

LOCAL HAPPENINGS

Since completing the premier issue we've had the opportunity to attend two model boat and ship activities within driving distance of our Newport Beach, California, office. Photos in this issue's column give you some idea of what we were able to see.

First, we took in the static display put on by the Ship Modelers Association, whose membership is mostly located in the Orange County area of Southern California. It was part of an Arts and Crafts show put on by the Recreation Dept. of Bellflower, California, at Simms Park. Under the direction of Association president, Lloyd Warner, the members brought out an impressive number of highly detailed models. Several members were on hand to answer questions from the spectators and also to prevent curious little fingers from damaging the goods. When we have the opportunity we will present a more detailed report on activities and accomplishments of this association.

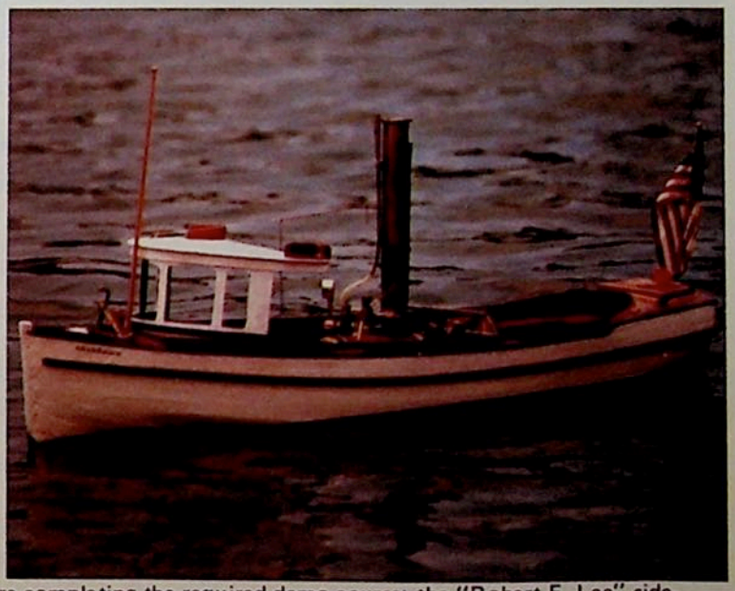
John Fry, La Palma, CA, built this German coastal minesweeper "Schutze" from a Robbe kit. John commented that all the parts went together like clockwork.

This city of New York Firefighter No. 74 was scratch-built by Leo Milowicki, Orange, CA. Fortunately, for our camera, Leo shut off the water nozzles during this close pass!

The Annual Scale Regatta and Picnic was put on by the San Diego Ship Modeler's Guild at the Mission Bay Park Model Yacht Basin, not far from Sea World, on Saturday, June 20. Trophies were awarded for; Spectator's Favorite, Modeler's Favorite, Junior Modeler (under 21), and Best of Show. In R/C operation, the categories were; Submarine, Steam, Sail, Tug, Electric-Military, Electric-Civilian, and Salvage/Workboat. There were also prizes in Static for "Powered" Military, "Powered" Civilian, and Sail. The regatta was directed by the Guild's Master-Logkeeper, Bill Kelly-Fleming, who, for most of the day, also handled the PA system, to call up contestants for their demonstration runs and also to keep the many spectators informed. Bill was additionally very kind in announcing our presence and the fact that we had free mags for the contestants and introductory subscription forms. We were completely caught off guard and very flattered by the avalanche of cash orders taken on the spot.

The model yacht basin is just that; a

Continued on page 79



Unfortunately both of these steam powered vessels ran out of steam before completing the required demo course: the "Robert E. Lee" sidewheeler by Norm Hiatt, San Diego (left), and "Arabesque" by Daniel Herrscher, also San Diego. Both boats scratch-built.

The 1628 "WASA", built from a kit. Photo courtesy of the Italian kit manufacturer, Corel. Wanna count the number of blocks?

The MODEL SHIPWRIGHT

By MILT ROTH . . .

There will always be a controversy concerning the descriptive terms *kit builder* and *scratchbuilder*. This controversy sometimes is carried over into the ideological aspects of who builds the better ship model. Frankly neither. Often, all too often, it amounts to open warfare. Ridiculous. There are those who will say with a great deal of pride, "I never built a model from a kit in my life." To them I say balderdash, an old term but quite appropriate for the time being. The word that best describes it is unprintable, at least on these pages. Might I suggest that you look up the word "kit" in your dictionary. This will go a long way in settling the question once and for all.

My contention is that the only difference between a store-bought kit and the kit assembled by the scratchbuilder is the manner in which it is accomplished. The manufactured kit, an assembly of parts, plans, fittings, and material, is purchased at one time, at one place, and from a source that makes a profit. The scratchbuilder, on the other hand, assembles his own kit. This can be done piece-meal. That would mean a little at a time is secured, usually as the material is needed. It can be done all at once. The kit can, and usually is, assembled from several

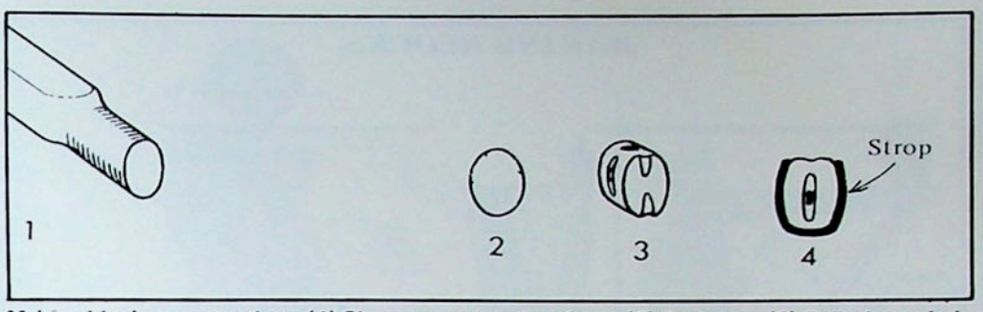
sources (purchases). . . if there is a single source of supply, all at once. The pre-planning modeler may, if they are of such temperament, take the list to the local source of supply, be it a shop or mail-order house, and make the big buy.

Would you not say that when they finished their purchases that they have produced a kit? I would. I know a few who have put their assembled "kit" in a box neatly marked for future use. Then on to the work bench or shelf in the closet. Next project is ready and waiting. Some have even added a fancy label and began to offer it for sale to others. Of course, there is a profit. A little advertising, a sale or two, and you might even call them a manufacturer. Don't knock it. Most ship model kit manufacturers started out that way.

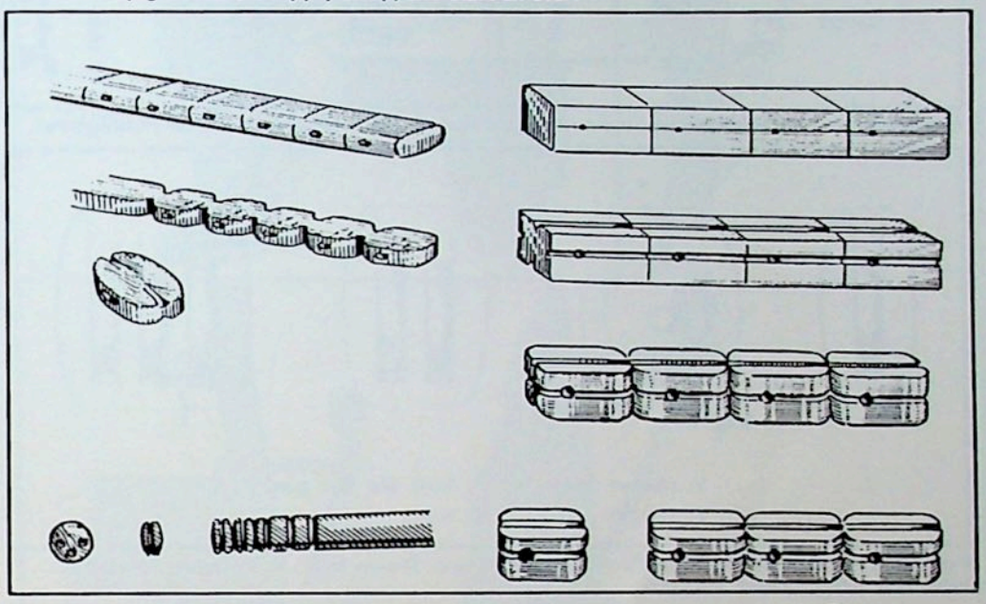
Assembling your own kit can be a lot cheaper than a store-bought number. There is no consideration for making a profit. There is less worry about expenses to pay suppliers and bills. There is no reason to share anything with distributors, dealers, importers, customs broker, etc. This is your kit. You made it. You're going to build it when you're ready, and in stages that you choose. It is complete in every way. It is a kit. Right?

What I am saying is that the things that are secured to make up a ship model can be purchased or made. If you purchase them as a complete (?) kit or a little at a time from commercial sources, there is no shame in that. The end result is what counts, a ship model. If you make every single part and particle from the raw material because you are of such a nature by your own choice, that too is fine. You can and will always consider yourself a pure purchaser and scratchbuilder. That too is laudable. Either of these two types of individuals produce a fine ship model, and isn't that what really counts? The fuss and feathers about titles of types of model builders is a waste of time. You could consider what you just read in the same context. I had to clear the air. Hope you don't mind.

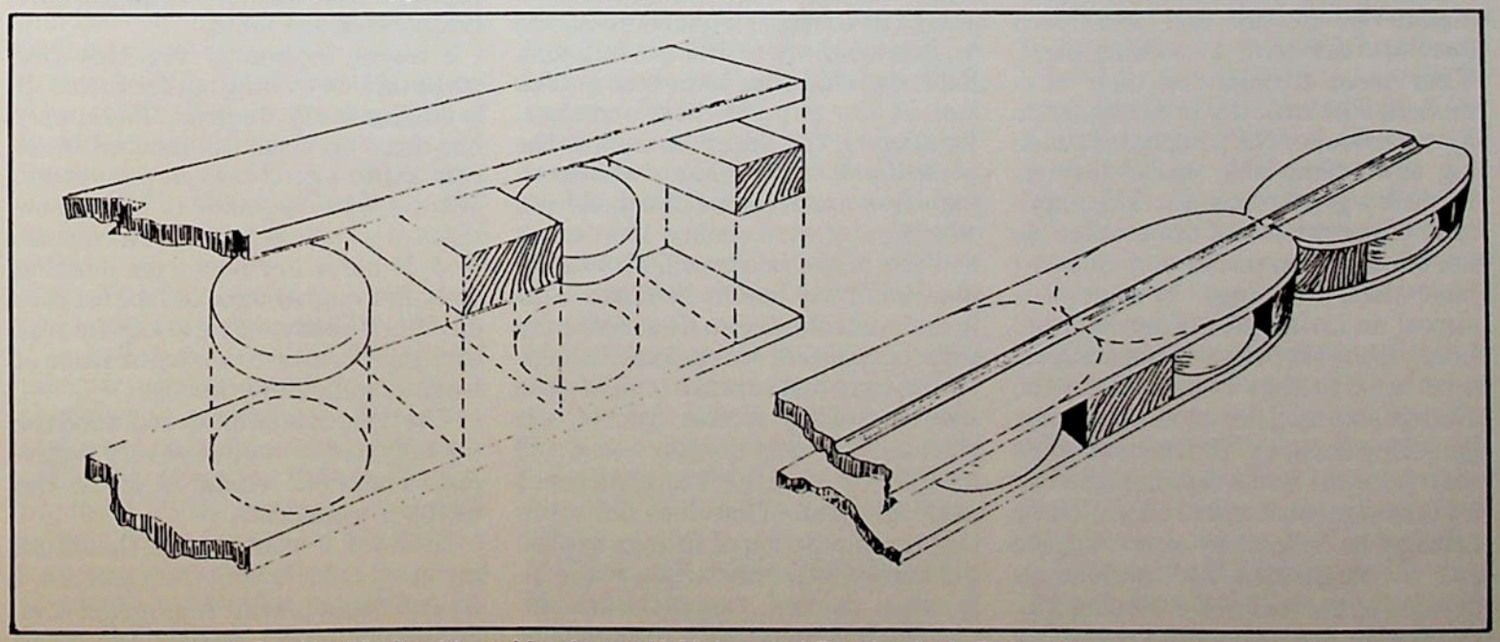
In case you were not already aware of it, many buyers of ship model kits are not content with just what "came in the box." Maybe the first time. Perhaps for several times thereafter. Some for their entire modeling career. To many, in a short time after building a ship model from a kit, a feeling of discontent sets in. They have to customize. Upgrading a kit and aiming for near *museum quality* is more the rule than the exception. Exchanging or making parts to replace those that came with the kit for other parts and materials closer in scale or detail goes



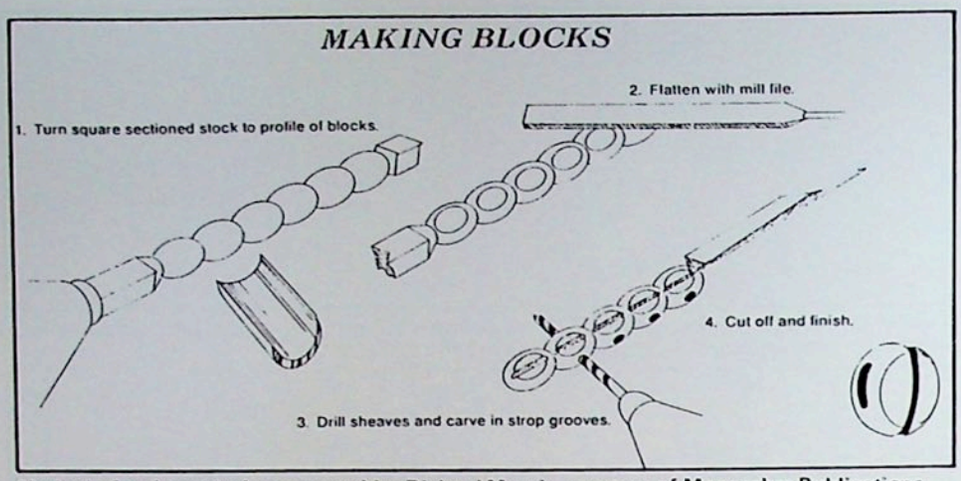
Making blocks one at a time: (1) Shape general outline form. (2) End view. (3) Drill sheeve hole and cut strop grooves. (4) Apply strop, and start all over!



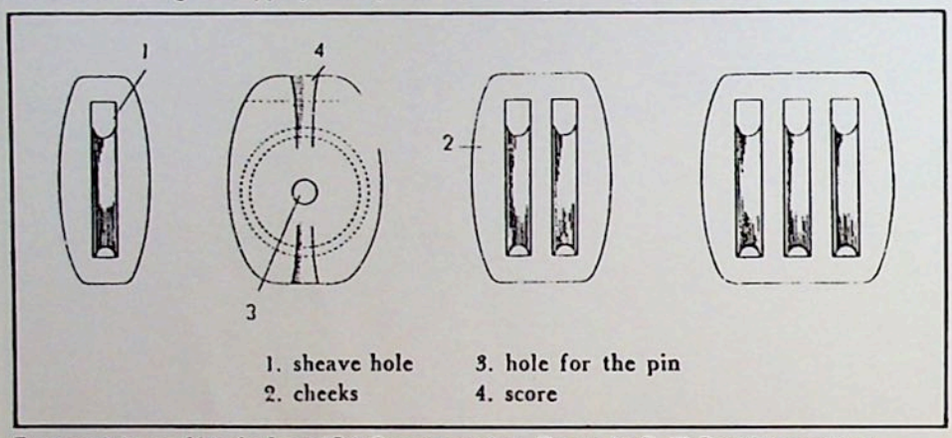
Mass producing blocks and deadeyes, using preshaped wood or plastic materials. From Schiffsmodellbau, courtesy Verlag Delius, Klasing and Co.



The sandwich method of making blocks with working sheaves. Hold the mayo! Drawing by A. Richard Mansir, courtesy Moonraker Publications.



Method of making blocks, proposed by Richard Mansir, courtesy of Moonraker Publications.



Form and shape of blocks from 18th Century to date. Drawn by E. W. Petrejus, courtesy Prinz Heinrich Museum, Holland.

on all the time. But you know that.

The "scratch" builder, on the other hand, believes he builds his ship model near perfect. He sees, and quite rightly so, no need for change. After all, he is making most of the parts himself. He still buys a lot of commercial parts providing they suit his needs. There is no need to waste time in making fittings when the store-bought variety is available. The *pure scratchbuilder*, one who builds all the parts himself, is rare indeed. He buys only the raw materials.

Both *kit builder* and (modified) *scratchbuilder* have a common need. They need fittings for their ship models. The majority of hobby shops have overlooked the potential of stocking and selling ship model fittings. Profit is a great motivator. The multitude of materials and scales often do not allow a shop owner to maintain a huge stock of fittings. To some, it is almost an invitation to financial ruin. Local hobby shops that do not maintain a stock of fittings is what turns the average ship modeler into a wandering, gathering shopper. The modeler must search for the items through catalogs secured from mail order houses. These catalogs he collects by answering the ads in magazines and periodicals devoted to the hobby. Developing a local market in ship model fittings is a matter of letting it be known that you feel they should be readily available. A shop should make arrangements to stock fittings of all types and have them when asked. That would be ideal, not practical, but ideal. One modeler tells another and that's how reputations are made. Shop owners, if they are conscientious and dedicated to the welfare of their customers, will soon realize what they have to do.

Let's take a quick look at the offerings of "ready-made" fittings available today. Let's discuss what materials are available and where they can be found. Failing all else, then let us take a quick look at how to make them ourselves. Remember, the desire as well as the pocketbook of the builder will determine how much can be obtained from whom and of what quality. The desires and the pocketbooks will also determine what will have to be made. This is undoubtedly due to dissatisfaction with the quality of commercial offerings.

Wooden sailing ships in real life, the modern sailing vessels, yachts, the steel-hulled vessel or a navy ship, will have almost all of the fittings on board made of metal. That does not mean that the simulation of fittings in plastic, wood or other materials, especially when painted, cannot be accomplished. It is becoming commonplace. Real life fittings do not, for purposes of accuracy, have to be rendered in the same material. Depending on the temperament of the modeler, the model can be "outfitted" with parts made exclusively in metal, wood, or combinations of both.

Don't overlook the types of line used for rigging. Some will not settle for cotton, others won't put a single piece of nylon on their ship model. Just what is a proper rigging for ship models? This is a topic which we will discuss as a subject unto itself.

The day is not too far distant when most types of fittings will be manufactured from petrochemicals. Tradition must give way to advancement. Greater detail can be shown with these materials. Wood blocks, as an example, can be simulated to perfection. This manufacturers have been forced to switch. Their action is not only to the demand of the radio control ship modeler seeking waterproof lightweight materials, but to the demands of the static builder as well. Both are seeking detail and accuracy.

Traditional materials, wood and brass, are going by the board. In truth, the costs of acquiring the materials and manufacturing have risen to the point that simulated substitution is almost mandatory. The traditional materials will never be rejected totally. A good example is boxwood.

Boxwood was the wood of tradition. Ship models, especially those of so-called museum quality admiralty and dockyard models, were expected to be built of boxwood. Imitation of the masters carried to the extreme. Some models are made on commission. The buyer has a right to demand that certain materials be used, or refrained from being used, on the model he is paying to have built. Some buyers have boxwood on the brain.

I regret to inform you that this material is becoming harder to find. It is not due to the demand. The supply has dried up because boxwood is not considered a good cash crop any more. What used to be made of box is now made of plastic. Reference, for comparison, is made to rulers, clay molding tools, knitting needles, and the list goes on. Other woods, exotic woods from all over the world, are taking the place of traditional building woods.

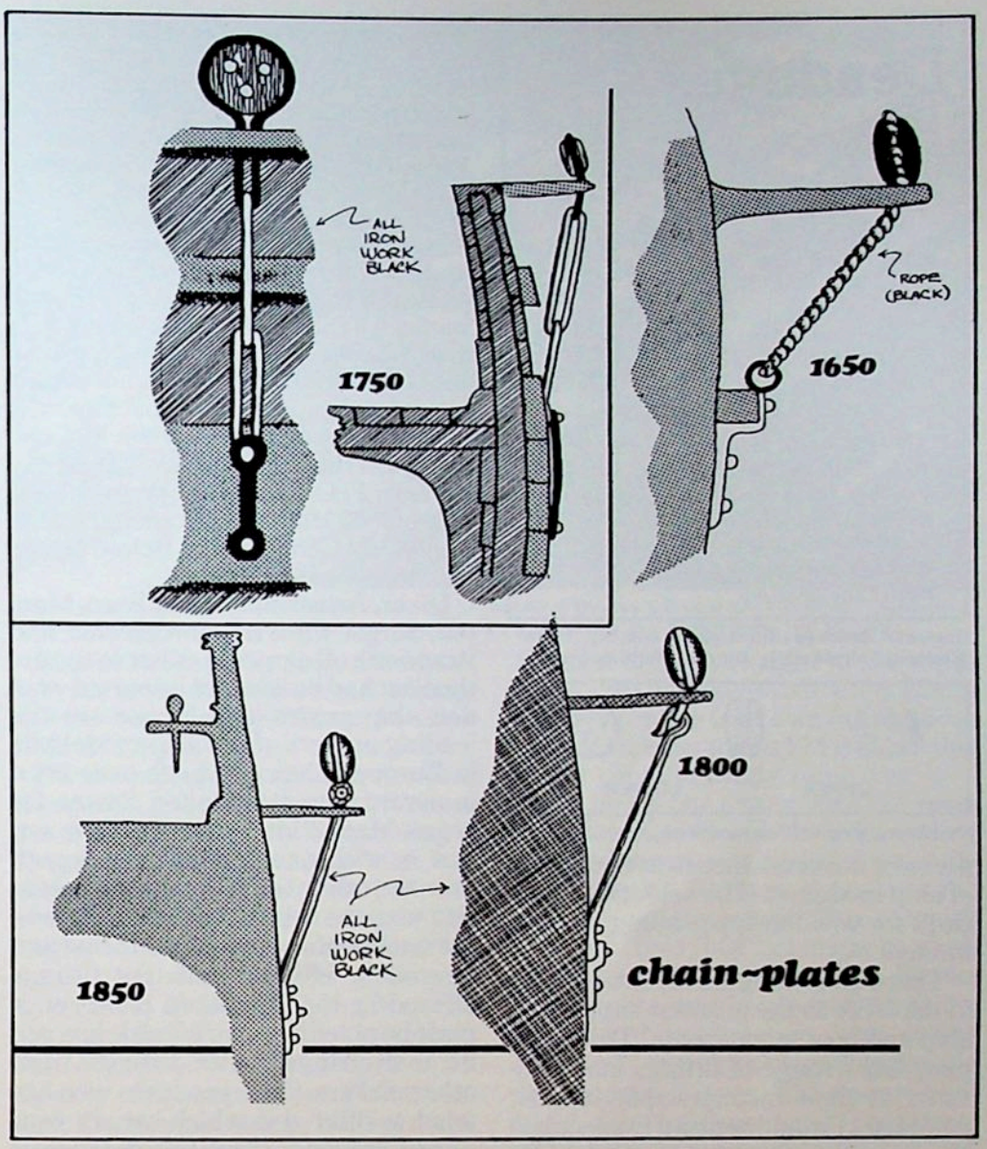
The materials of brass and wood are not only easy to work but very forgiving. They will continue to be the modeler's materials.

However, it must be said, that there are great models built from plastics. I do not mean plastic ship model kits. Scratchbuilt ship models are being

made from plastics. The parts are cut, formed, and shaped with blades and molded with heat. If you break a part, you can make another just like you can from wood or brass. I suppose that goes for everything in modeling these days, providing you have the talent and/or the desire.

Companies that manufacture the ship model kits limit the selection of fittings that they offer for sale to the scales of the kits they manufacture. Most of their fittings are stock items. These are the parts that would be found in their kits. There is nothing wrong with using these parts when the situation demands. This limitation is undoubtedly the greatest problem for modelers, mail order houses, and hobby shop owners alike. Not only must there be a variety to satisfy the demand, but the variety has to be available in assorted scales. This fact will be noted in our discussion.

For purposes of comparison, let us take a look at some of the commercial fittings that are offered. The selection is a random sampling. Manufacturers and makers of ship model kits and their fittings often secure their wares from the same source. It should come as no surprise to you that many fittings are produced for ship model kits by the same factory. How many electrical components used in the television sets of individual trade-named manufacturers are from the same factory? For the most part all this is unknown to the buyer. For the major portion of this discussion, I shall confine my samplings to wooden sailing ship models and their fittings.



Deadeyes and chainplates through the ages, courtesy North Shore Deadeyes.

One of the few companies that sell the hull construction kits and the fittings kits as a separate unit is Billings, of Denmark. The modeler can buy the first portion, complete the building, and then secure the second unit; the fittings. Great idea when one is on a limited budget or cramped for space. The choice also allows selection of materials, should the buyer not wish the parts contained in the fittings kits. The model builder who has built a hull of the same ship from scratch and needs only fittings, can buy that fittings kit. The fittings, on the other hand, may come from another source. The hull is built from a Billings kit manufactured in the same scale. Interchanging is possible, providing the scales are constant. It all happens.

The kits offered by Billings containing the ABS hulls are complete with fittings. Each fittings kit contains an assorted selection of brass, wood (deadeyes and blocks), and plastic fittings. Both period and modern ships are available. Parts and fittings are in metric scale of 1:100 to 1:20. There is an interesting line of brass winches, ladders, and stanchions which are offered for the modern ships. While sizes are shown in their catalogs, one has to know the ship model that the winch or fittings were to be placed on to know the scale.

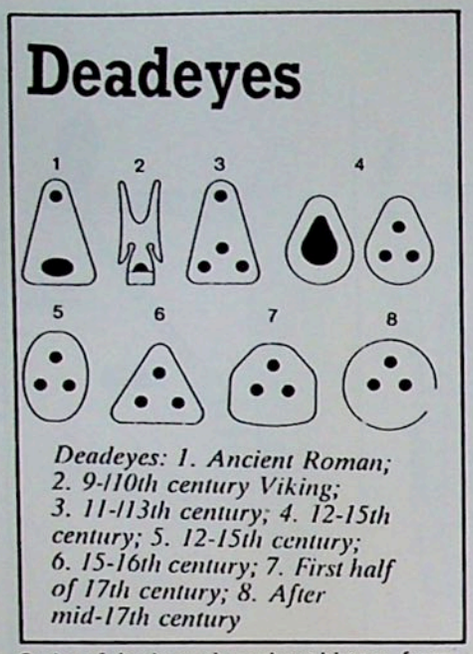
Fittings made by Billings, purchased from some dealers and the distributor, are available in blister packs. You may need only one or two items but will have to purchase the whole package. Other houses sell as many of the individual parts as are needed. Not all items shown in the home company's catalog are stocked and offered for sale in the USA. Check your local hobby shop, mail order house, or write to the US distributor: Altech Marketing, Inc., P. O. Box 286, Fords, New Jersey 08863.

METAL, PLASTIC (Modern) FITTINGS

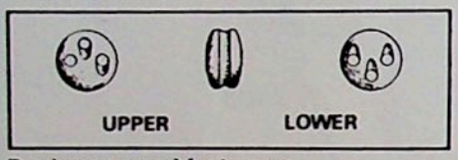
Primarily, the fittings which are offered by the majority of the makers of radio control kits featuring fiberglass, styrene, and vacu-formed hulls are manufactured by other companies. There are a few American makers of such kits that produce all the fittings that comprise the complete kit. American companies tend to purchase the fittings for their kits from others. A few have an assortment of fittings and parts that are sold separately. The American companies that offer R/C kits can be contacted through their advertisements on the pages of this and other periodicals devoted to ship and boat model building.

European companies who offer their ship model kits for sale in the United States do not stock a complete line through their outlets in this country. The parts listed in their catalogs do not match the supply in the distributors' warehouses, the dealers' shops, etc.

Graupner, of Germany, and Stab, of France, have outlets established in the United States. This fact is noted by



Styles of deadeyes throughout history, from Historic Ship Models, Sterling Publications.



Deadeyes grooved for lanyards.

periodic advertisements in the media of ship modelers. The selection of fittings for wooden-type sailing ships is limited.

There is one single source not listed in the USA as the greatest supplier of ship and boat model parts. This company has a range of fittings manufactured at their factories that is most complete. I would venture to speculate that the majority of ship model kits sold in the world today contain one or more fittings made by this company. The majority of the fittings are for modern-type vessels. There are few period fittings. What there are, however, are excellent. You can write for information about Aeronaut. I cannot tell you what their sales policy will be to the individual ship model builder. 'Aero-naut" Modellbau, Stuttgarter Strabe 18, P. O. Box—Postfach 384, D-7410 Reutlingen, West Germany.

Dumas, one of our remaining US-based manufacturers, still offers a fine line of static and working ship models, sailboats, and "fast boats." They also have a line of running hardware in addition to parts and fittings. Propellers and other power needs will be discussed by other more expert in the subject than myself. You may secure a catalog for $2 by writing: Dumas Products, Inc., 909 East 17th Street, Tucson, Arizona 85719.

COREL SHIP MODEL FITTINGS

This company is one of the better known and quality makers of a fine line of plank-on-bulkhead wooden ship models. They also sell their manufactured fittings in addition. Scaled wood and brass fittings, including decorative items, cast figures of ship's decoration, and molded strips of decorative finery are from this line of kits. Many are suitable for period and some were designed for the modern ships. They feature a tug, P.T. boat, and a sailing yacht. All the fittings can, with a little modification, be used on other ships not related to Corel's line. Scales offered are mostly 1:50 and 1:75.

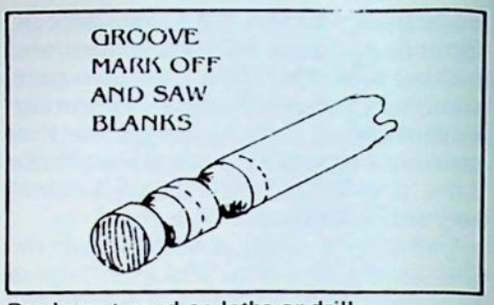
American importers of the kits and fittings of the Corel line are: Marittima Models, P. O. Box 1107, Woodbridge, Virginia 22193, and Dromedary Ship Modeler's Center, 6324 Belton Drive, El Paso, Texas 79912.

Dikar, Artesania Latina, Euro, Mantua, Sergal, Pan/Art, Aeropiccola, and Amati are all names familiar to the enthusiast and builders of imported wooden ship model kits. These are the leading makers of the ship model kits in Europe. Their products have been imported into the United States for years. Many "kit" modelers have settled in with one particular company over the other because they are satisfied with the selection of offerings and the quality of the kit. Customizing and upgrading is done with the fittings offered by the kit maker. However, it must be noted that any of these kits can be interchanged with fittings from other makers. Once you learn who has what to offer and which satisfy your needs, you may adopt this practice of interchange. Many other ship model builders have.

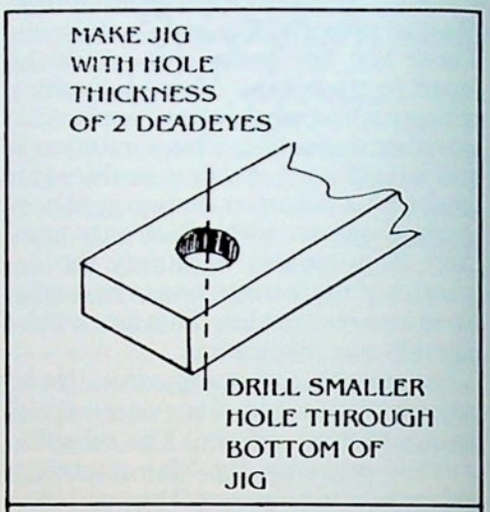
Selected scale fittings come in the range of their respective kits. Not all fittings shown in the manufacturers' catalogs (European) are stocked by U.S. distributors. Shopping around is indicated. In some instances direct purchase from the European manufacturer may be an advantage not only for variety but also price-wise. Respected manufacturers located overseas who sell fittings can be contacted. Addresses of foreign kit makers are available from this editor.

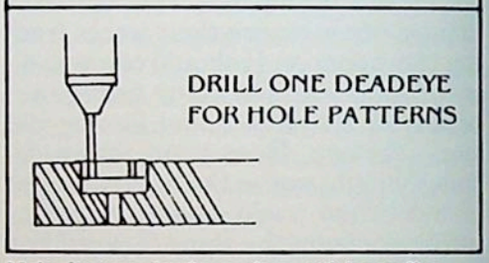
METAL & BRASS FITTINGS (Period and Modern)

A wide variety of scale ship model fittings are offered by the American manufacturers. Britannia is the metal used by Bluejacket. The standard white metal mixture by Model Shipways is now being intermixed with some fittings made of britannia. Parts subject to extreme use; i.e., mast rings, blocks, yard trusses, etc., are being remade in britannia over at Model Ship-

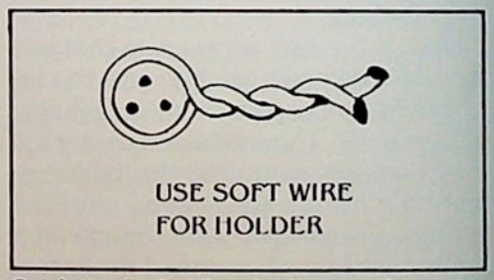


Deadeyes turned on lathe or drill.





Make jig two-deadeyes deep, with smaller stop hole at bottom. Use completed (drilled) deadeye placed over deadeye blank as a template to drill. Hold steady with toothpick through small hole from bottom of jig.



Quick vise for holding deadeyes to shape or drill. Ideas above by Henry Bridenbecker, or Ship Modellers Association, Fullerton, CA.

ways. The lists of fittings, which are of white metal, offered by A.J. Fisher, has some items that could be of interest to working sailing yacht builders. While A.J. Fisher does not cater to the working sailing yacht builder or offer sailing ship model kits, they do maintain a list of fine sailing yacht fittings.

You, who build solid hull models, are familiar with the kits manufactured by the following listed companies. Fittings manufactured by them are in a wide range which accommodate a modeler's needs in several popular scales. Refer to their respective catalogs. Distribution is by direct sales to

public and special sales through special arrangement with retailers.

Bluejacket Shipcrafters, Maine Street, Box 18, Castine, Maine 04421; A.J. Fisher, Inc., 1002 Etowah Ave., Royal Oak, Michigan 48067; and Model Shipways, 39 W. Ft. Lee Road, Bogata, New Jersey 07603. Tell them you read about them in *U.S. Boat & Ship Modeler*!

NAVAL SHIP FITTINGS

White metal spun cast fittings for World War II ships in scales from 1:384 to 1:24 are produced in the United States by H-R Products. The majority of the items on the lists are repetitious. That is to say that the same items are found in different scales. Good thing. Most are for American WWII ships. A few fittings are on the special list for Japanese small arms and are limited to one scale. This takes a lot of the tedious work of making small deck fittings and guns away from the valuable time of the serious military modeler.

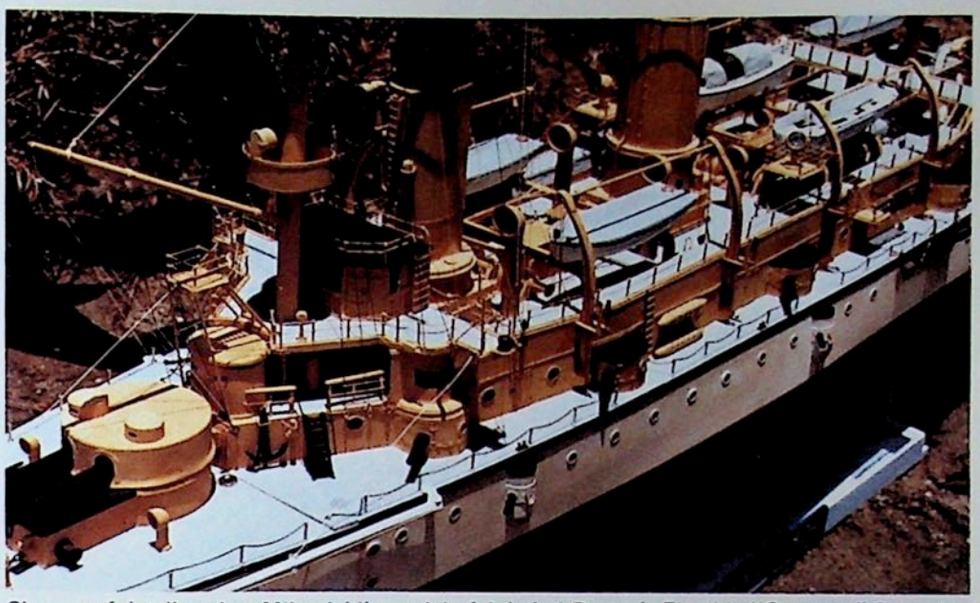
The list of fittings can be secured for a stamped, self-addressed envelope, and a small amount of time from: H-R Products Company, P. O. Box 67, McHenry, Illinois 60050.

Imported fittings for US World War II and British military vessels from 1955 to date made of styrene, G.R.P., polyester, and white metal with many materials in combinations, are now available. All are in 1/8 scale (1:96). Sirmar (TM) fittings are found in several English kit offerings as well as their own. Extensive research and exceptional attention to detail make these fittings a pleasure to work with and a delight to see.

This constantly enlarging lightweight selection of accurately scaled fittings, including aircraft, for British and American Naval Warships, is now being offered to US modelers with a desire to build 1:96 accurate warship models. The manufactured fittings include a wide range of armaments. Contact: Sirmar Ship Model Fittings, Ltd., The Dromedary, 6324 Belton Drive, El Paso, Texas 79912; (915)584-2445.

PHOTOETCHED BRASS (NAVAL) MODEL SHIP FITTINGS

The process is not that new; the offering is. The fittings are formed in sheets and as kits containing loose parts for assembly. All are in accurate detail and scales of 1/350, 1/400, 1/600, and 1/700. Fine workmanship of such items, as a radar reflector and railings are captured in perfection. In case you missed the armaments, write for information at Loren Perry's Gold Medal Models, 12332 Chapman Ave., #81, Garden Grove, California 92640.



Closeup of detail on Leo Milowicki's model of Admiral Dewey's Flagship "Olympia," Spanish American War, 1895. Photographed at San Diego Ship Modelers' Guild June '87 Regatta.

Bluejacket has a limited offering of 1/96 scale brass photo etched fittings of US Navy fittings listed in their 1986-87 catalog.

For the sailing ship modeler desirous of securing photoetched brass fittings, the answer has come, at last. Roger Teagarden, professional modeler, has placed his specially designed 1/96 and 1/48 scale fittings on the market. The rubber-backed photoetched items consist of .013 thick brass. The most common items, as would be made at the blacksmith's forge, are included. These are intended to go aboard a sailing ship of the late 18th and 19th century. Rings, mast bands, bulleyes, etc. are just a few of the 250 units in the collection. The first sheet is numbered 101, and Roger tells me there are more to follow. The selection to be offered in the upcoming photoetched sheets will be based on the demand and/or suggestions of the buying public.

Information can be had for a self-addressed, stamped envelope. Mail to: The Dromedary, 6324 Belton Drive, El Paso, Texas 79912.

While it would be an enormous undertaking, both physically and financially, to stock all the scaled sizes and varied fittings needed to build ship models by commercial outlets, a start has been made. The word is being spread to your favorite store (shop) and perhaps it is becoming a source of "ship's parts." Maybe the words of Henry Ford, "I made no money out of the Model 'T' but made millions selling the parts to keep them on the roads," are sinking in. Get your local store owner to think about it as applied to ship model fittings.

So much for the commercials and the commercial sources of ship model fittings. Let us get right to the nitty-gritty. Shall we see what a few words on how to make your own fittings does to your technician's itch? I trust all this might come in handy some day.

We begin our lesson with the most common item found aboard a sailing ship and the most varied in size and design; blocks. Without going into the physics and technical data of work load, etc., the types that might be needed are named by their designs. Blocks are simply a machine to transfer force. The more times the rope, cable, or line is "roved" through a pair of blocks, the more power it gives. The power is applied at the fall (loose) end. Therefore, a block can be a single sheeved unit or, as was in the past, contain as high as eight sheeves. In an abstract form, it could be said that a block is simply a guide for the rope.

The rope moves through the block. A turning unit (sheeve) is incorporated in the design. Early model blocks had only the hole. If you want a true working block, then the sheeve can be designed to turn on the pin.

Making a block is like making a sandwich. The *cheeks* are the slices of bread, the *sheeve* is the slab of round-cut meat, and the *pin* is that fancy toothpick you get at some restaurants. The *score* is the diagonal slice. Cut off the crust and change the material, and you made a block. Incidentally, you can imagine the slice as the place to strap (strop) your block to fix it in position to do its work.

While we are on the subject of strops, please keep your material in the era along with the design. I never will forget the misdirected pride of a

Continued on page 74

CHESAPEAKE BAY "SKIPJACK"

By TIM MILLER . . . Harking back to the days of rather uncontrolled oyster poaching in the Chesapeake Bay area, Tim has modeled the type of skipjack or "sharpie" as used in those days. He says it still goes on, a little.

American Small Sailing Craft, by Howard I. Chapelle, describes a class of skipjacks known as "oyster pirates." These were fast boats used by poachers who, often at night, would dredge oysters on beds reserved by law for tonging. The *Messenger*, as she was named for some years until blown up by a gasoline explosion in 1942, was built near Oriole, Maryland, sometime between 1900 and 1906, for a poacher. Five sister ships were also built. These boats were ruggedly built to take the abuse of hauling the dredge and fast enough to outrun the State Conservation Inspectors and keep the poachers out of jail.

When I built the model, I was working as a carpenter, and most of the material came from wood scraps found on the job. The 1-1/2 x 1/4-inch spruce strips were cut from a very close-grained, knot-free piece of ordinary 2 x 4 with a circular saw. Edge glue these together to make the wider stock, then cut the parts out with a saber saw or coping saw. A block plane was used to clean up the saw cuts. The 3/32 plywood for the frames, planking and deck was from an old hollow core door. This door skin material is available at lumber yards. A razor knife will cut the parts out easily. The oak came from a discarded pallet on which sod had been delivered, and my father donated a teak board for the trim parts. A circular saw and block pane were used to make the needed strips. I purchased the maple dowels for the spars, glue, wire, paint, brass strip and tubing, and didn't spend over $15 to build the model.

Both slow and quick-setting epoxy glue were used for assembly and for a sealer on all parts exposed to water. The sealing process is started early in construction, and each part is sealed and sanded before being assembled to the model. The method I used to epoxy seal the model was to sand the parts, finishing with 150-grit sandpaper. Then used a scrap of wood like a squeegee to spread a very thin layer of epoxy on the part. Next, I rubbed the epoxy into the grain of the wood to fill it and smooth the surface with light strokes of my finger, with the grain, the length of the part. When dry, I sanded with 100 then 150-grit sandpaper, till the epoxy layer was almost gone, then put a second coat of epoxy the same as the first. The part would be ready for assembly when dry and sanded. It is most important that the epoxy be spread as thin and as smoothly as possible; even a small fingerprint left to harden in the epoxy will be a bear to sand out. Epoxy may not be good for your skin, so you might want to wear rubber gloves when doing this. The final painting will be done when the model is completed.

The keel assembly is built flat on the plans to assure alignment. Use quick-set epoxy for sealing and slow-set for assembly. Both sides of the case sides and the ends and top of the keel that will be inside the ballast keel slot should be well sealed with epoxy before assembly.

Use weights to hold the fore and aft keels in place on the plan and add the case rear post. Add the case side when everything is in place. Make the arm for the ballast keel. Mark the frame locations on the keel. When the keel is dry, take it up and check that the ballast keel arm will fit into the slot in the keel. The model was originally built with a scale-type centerboard made of lead, but this didn't put the weight low enough to hold her on her feet, so, the design was altered to the ballast keel

Monster from the deep emerges to take a brief look at Tim Miller's skipjack "Messenger."

shown. Add the other case side, using plenty of clothespins or clamps. Remember all joints must be water-tight. Box in the mast tube slot with 1/4-inch square spacers and 3/32 plywood sides. You will wind up with a 3/4-inch square hole. Cut out the parts for the stem, head, skeg, sternpost, and rudder. Trim and sand these parts to fit the keel properly while it is still flat on the plans. The bowsprit, rails and cabin trunk should be done while waiting for the epoxy to set.

The frames are cut from 3/32 plywood, being careful to cut the notches for the keel, sheers, and chines accurately. Test fit the frames to the keel, making sure the lower point of the frame is 3/32 above the bottom of the keel. When they fit right, use quick-set epoxy to glue them in place, use a small square to get them perpendicular to the keel.

The 1/4-inch square sheers and 1/4 x 3/8 chines are 40-inch long spruce attached with quick-set epoxy. Attach these strips so the end grain runs most nearly vertical, use rubber bands for clamping.

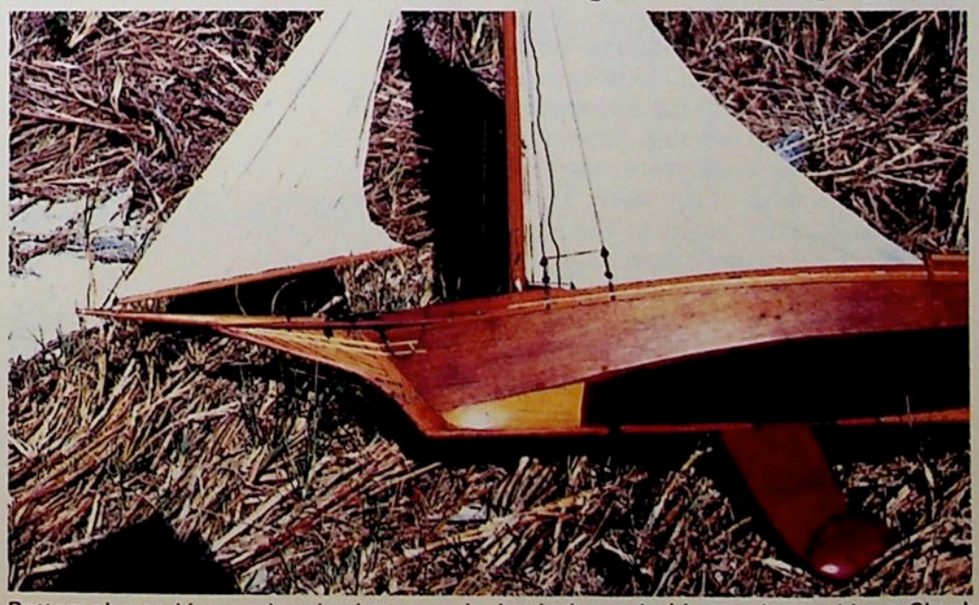
Do the sheers first, gluing them into the upper notches of Frames 3 and 4. Make sure they protrude past the transom frame enough to be trimmed later. Be careful not to pull the frames out of alignment with the keel and make sure the keel is straight with the help of a string line or straight-edge. Glue the sheers into Frames 5 and 6 and then the transom frame. Working foreward, the sheers are glued into Frames 2 and 1, then trimmed to fit the stem. Taper the backside about a 1/2-inch long to roughly fit the stem. From here it's fit and trim until the sheer fits snug against the side of the stem and dies out 1/8-inch short of the face. The top edge is held 3/32 below the top of the keel. When both sides fit, glue them in place. Trim the rear flush with the transom frame.

The chines are installed in the lower notches in the same way. They are fitted to the stem with the bottom of the chines 7/8 inch up from the heel of the stem, measured along the face of the stem. Trim the chine to the appoximate angle of the bottom and flush with the transom frame.

A keel liner made of 1/4-square spruce is added along the keel. This fits between the frames, 3/32 above the keel bottom, and has the lower surface trimmed to the curve of the keel. Add the 1/4-square backing to Frame 2 and run the liner to it. Install the 1/4-square bottom cross braces between Frames 4 and 5 and between Frames 2 and 3.

Make a jig from a 10-inch wide board three feet long to hold the frame; be sure it's straight. Mark the centerline and lines square to it 12 inches from each end. Cut two 2 x 4 blocks to the width of the sheer at Frames 3 and 5. Find their centers and glue them to the base on the inside of the lines squared across. Put the frame upside down on the jig so the keel lines up with centerline and sheers at Frames 3 and 5 are touching the corners of the blocks. Glue the sheers to the blocks with super glue.

Use a sanding block about 2 inches wide and 6 inches long and block sand the frame smooth and fair. A straight piece of 1/4 square was used for a batten strip to check fairness. The keel liner can be carved to the approximate angle of the bottom and block-sanded. If you break a few glue joints while sanding, fix them with super glue and



Bottom plywood is scored to simulate crosswise herringbone planking used on real boat. Chunk forefoot is three spruce blocks, each side. Non-scale bulb keel added for stability.

Even in color, all the fine detail on the model is difficult to pick up in a photograph.

keep going. Use caution when sanding the transom edges in order to avoid splitting the outer layer of the plywood.

The sides are made of 3/32 plywood 38 inches long and 4 inches wide. Starting at the middle, use clothespins to temporarily clamp the sides tight to the sheers and chines. Trace around the frame to mark the shape of the sides on the plywood. Remove them and cut out with a razor knife. Taper the inside about a 1/4 inch back from the stem edge so it will fit tight to the stem. Clamp the skins back in place and check the fit, trim the taper at the stem as necessary. It is important that the width to the outside of the plywood sides at the stem be 1/4 inch so the head assembly will fit properly. When satisfied with the fit, spread a thin layer of slow-set epoxy to the entire inside surface of the sides, and a coat of epoxy to the mating surfaces of frames, sheers and chines.

You will need to work simultaneously on both sides, a little bit on one side then the same on the other, to avoid building a warp in the model. Clamp the sides on with clothespins, taking care to get it aligned properly. When it's right, use plenty of clothespins to hold the sides tight to the framework. I used over 100 on this step. Four of the stiffest clothespins were used to squeeze the sides at the stem. These were temporarily glued to the sides with super glue to keep them from slipping off. Let it set over night, then trim and block sand all the edges flush.

Use stiff paper and make a pattern for the bottom. Trim until the pattern fits along the keel and is flush with the foreward edge of Frame 2. Mark the rear 1/8 inch past the transom. Use the pattern to make the bottoms of 3/32 plywood. If your material is wide enough, arrange the pattern on the plywood so the grain runs crosswise to simulate the herringbone planking used in the real boat. Get a neat tight fit of the bottom to the full length of the keel. The foreward edge is trimmed flush with the front of Frame 2. Trim as close as you can along the sides, as excess width here will cause the plywood skin to buckle under the pressure of the string binding used to hold them in place while the epoxy sets. The rear edge is left 1/8-inch long. Apply slow-set epoxy to both the bottoms and bottom framework. Use weights, rubber-bands, and kite string wrapped tightly around the hull, not the jig, to hold the bottoms in place while the glue dries. Clothespins can be slid under the string binding as wedges to tighten up problem spots. Let it set over night, then block sand the bottoms flush along the sides. The rear edge extends 1/8 inch past the transom and is sanded square, the front is sanded flush with Frame 2. The boat will perform better if the corners at the chines are crisp. Resist the urge to round them.

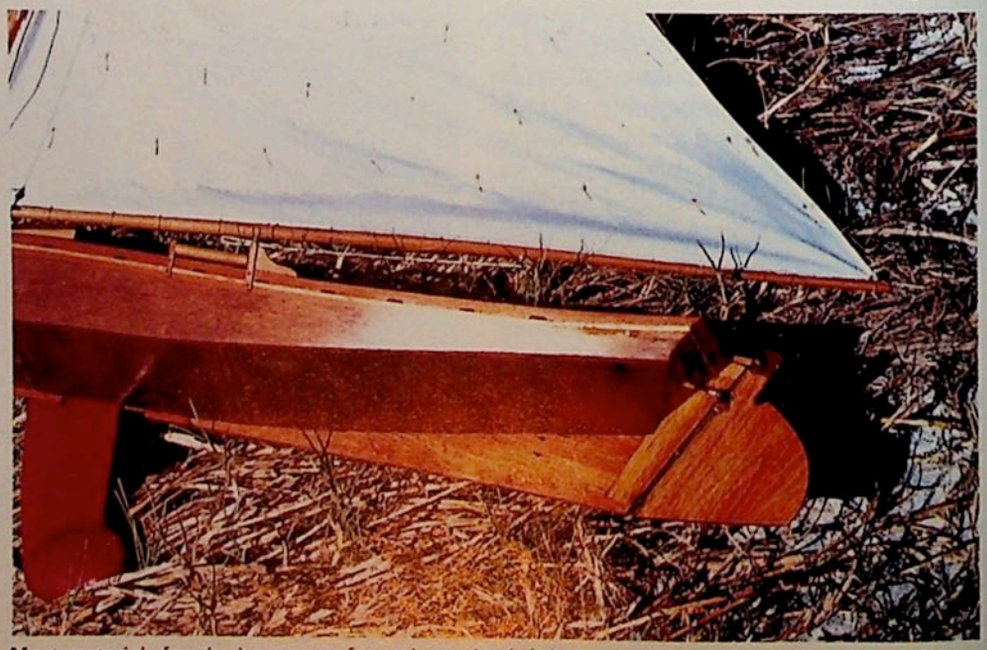
The chunk forefoot is made of three 1/4 x 1 x 3-1/2-inch spruce blocks for each side. Trim the bottom of the chines and plywood skins so the blocks will fit tight against them and then trim the forefoot blocks to fit against Frame 2. Glue them in place with a quick-set epoxy. When dry, carve and sand to shape. Frame 1 is the scale location of the rear of the forefoot, Frame 2 was used to avoid excessive twist in the plywood bottom.

Sand the entire hull with 150-grit sandpaper and seal with two coats of slow-set epoxy sanded thoroughly between coats. The hull can be cut loose from the jig when dry. Block sand the topside smooth and fair.

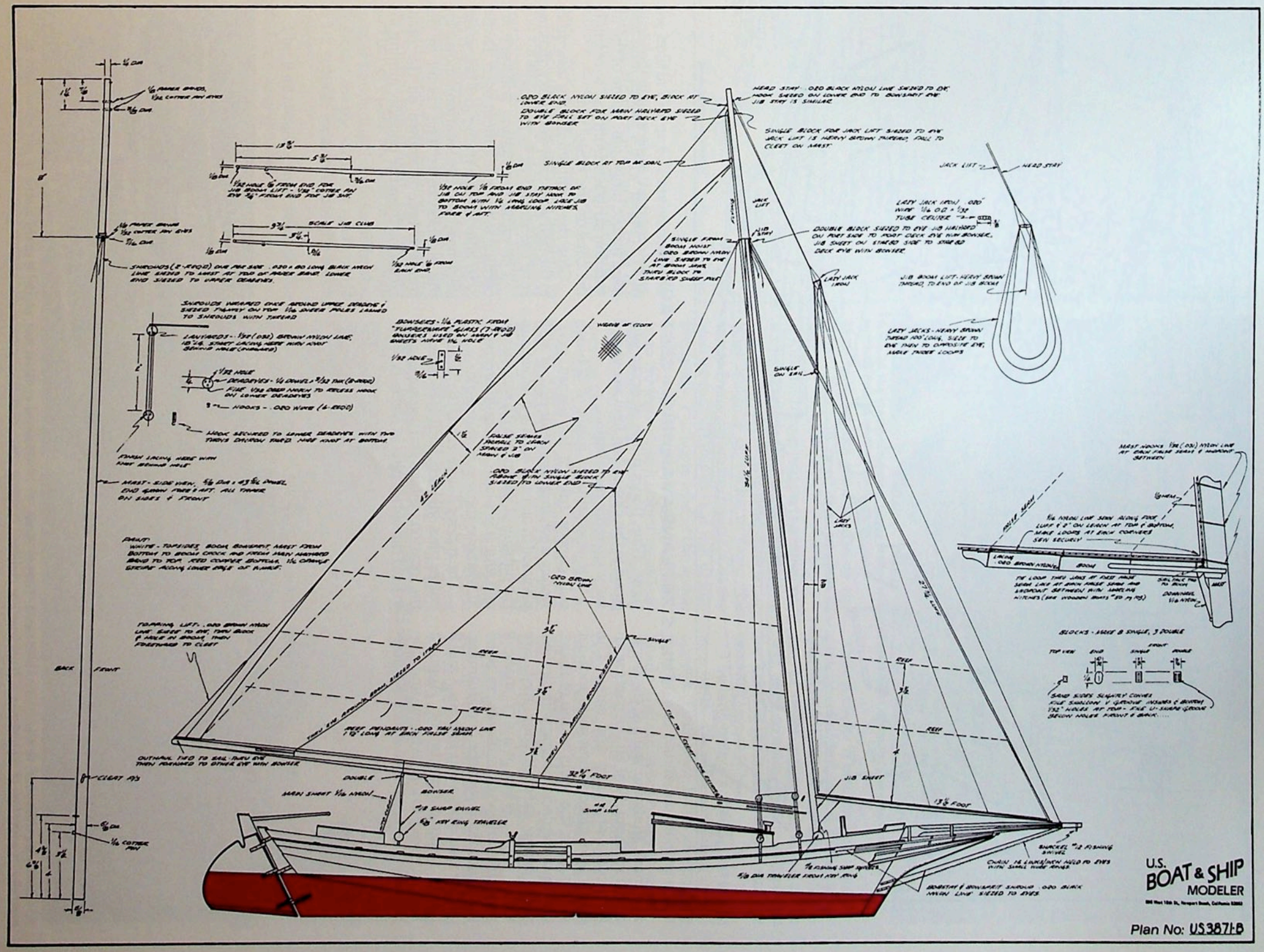
Make a deck beam according to the plans and use it as a pattern to make the others. The 1/4-square cross pieces are set in the notches in the keel and butt to the sheers. Trim the top of the sheers so the deck beams fit on top of the cross pieces as shown. Make small reference marks on the sides at the center of the beam that will mount the main sheet horse, so you can find it later when the deck is on.

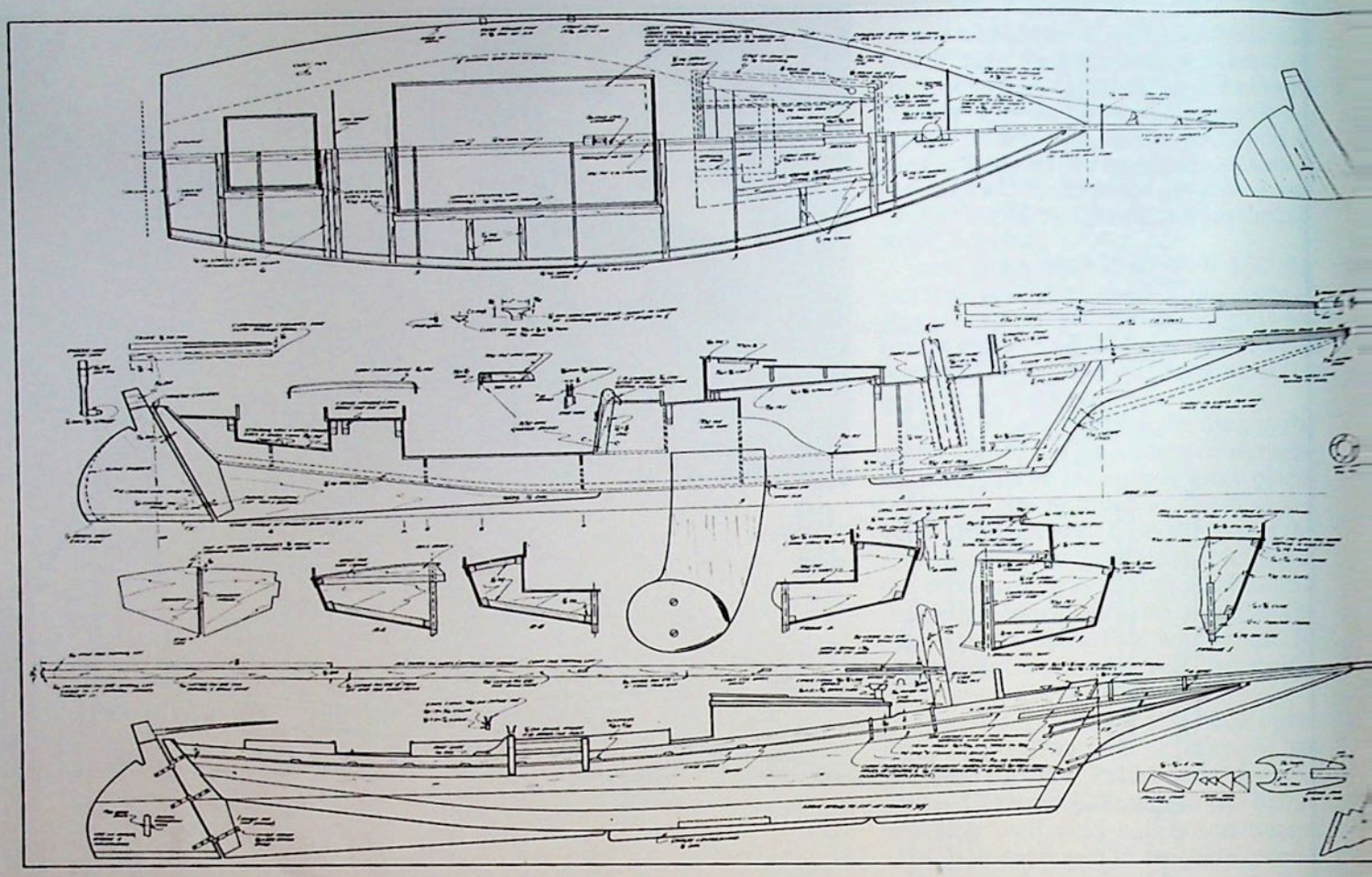
The side frames for the deck openings are 1/4-square. Frame 3 has notches for the cabin side frames. Make notches as shown on the hatch, standing well, and cabin end beams 1/16-inch deep and fit the side frames in place. The short deck beams beside the hatch and cabin openings are set slightly high to allow shaping the deck curve. Sand all the deck framing smooth and fair, checking with a batten strip.

The floors and walls of the hatch and standing well are 3/32 plywood. Make the floors the same size as the deck opening. The walls are cut 2-1/4 inches high for the hatch and 2 inches for the standing well. Cut the sides to the length of the floor and the ends to fit between the sides. Test fit the parts



Most materials for the boat came from the author's job as a carpenter, the rest purchased for about $15. Tim is now a fishing boat skipper.


HEAD STAY - .020 BLACK NYLON LINE SIZED TO EYE HOOK SIZED ON LOWER END TO BOWSPRIT EYE. JIB STAY IS SIMILAR.
.020 BLACK NYLON SIZED TO EYE, BLOCK AT LOWER END
DOUBLE BLOCK FOR MAIN HALYARD SIZED TO EYE FULL SET ON PORT DECK EYE WITH BOWSER
SINGLE BLOCK FOR JACK LIFT SIZED TO EYE. JACK LIFT IS HEAVY BROWN THREAD, FALL TO CLEAT ON MAST.
SINGLE BLOCK AT TOP OF SAIL
JACK LIFT
HEAD STAY
LAZY JACK (.020) .020" WIRE 1/16 O.D. x 1/32 TUBE CENTER
DOUBLE BLOCK SIZED TO EYE JIB HALYARD ON PORT SIDE TO PORT DECK EYE WITH BOWSER. JIB SHEET ON STARBD SIDE TO STARBD DECK EYE WITH BOWSER.
SINGLE FROM BOOM HOIST .020 BROWN NYLON LINE SIZED TO EYE AT BOOM JAW, THRU BLOCK TO STARBD SHEET PIN
JIB BOOM LIFT: HEAVY BROWN THREAD, TO END OF JIB BOOM
LAZY JACK (.020)
LAZY JACKS - HEAVY BROWN THREAD 100' LONG, SIZED TO EYE THEN TO OPPOSITE EYE, MAKE THREE LOOPS
SCALE JIB CLUB
SHROUDS (2-.020) ONE PER SIDE, .020 x 80 LONG BLACK NYLON LINE SIZED TO MAST AT TOP OF PAPER BAND. LOWER END SIZED TO UPPER DEADEYES.
SHROUDS WRAPED ONCE AROUND UPPER DEADEYE & SIZED PLANTY ON TOP 1/16 SHEER POLES LAMED TO SHROUDS WITH THREAD
LANYARDS - 1/32 (.031) BROWN NYLON LINE; 10 1/4" START LACING HERE NEXT KNOT BEHIND HOLE (CHANGED)
DEADEYES - 1/4 DOWEL x 3/32 THK (8-.020)
FIVE 1/16 DIED HOOK TO RECESS HOOK ON LOWER DEADEYES
HOOKS - .020 WIRE (4-.020)
HOOK SECURED TO LOWER DEADEYE WITH TWO TURNS DIVIDED THRED. HAVE KNOT AT BOTTOM
FINISH LACING HERE WITH KNOT BEHIND HOLE
MAST - SIDE VIEW, 5/16 DIA x 43 5/16 DOWEL END GRAIN PARALLEL AT. ALL TAPER ON SIDES & FRONT
BOWSERS - 1/16 PLASTIC FROM "TUPPERWARE" GLASS (7-.020) BOWSERS USED ON MAIN & JIB SHEETS WITH 1/16 HOLE
1/32 HOLE
WRAP AT CORN
FALSE SEAMS INSTALL TO LEACH SPACED 2" ON MAIN & JIB
.020 BLACK NYLON SIZED TO EYE PARALLEL WITH SINGLE BLOCK SIZED TO LOWER END
LAZY JACKS
SINGLE ON YARD
MAST HOOPS 1/16 (.031) NYLON LINE AT EACH FALSE SEAM & MIDPOINT BETWEEN
1/16 NYLON LINE SEWN ALONG FOOT, 1 LUFF & 2" ON LEACH AT TOP & BOTTOM, MAKE LOOPS AT EACH CORNER, SEW SECURELY
TIE LOOP THRU JAWS AT FIRST MAIN SEAM LINE AT EACH FALSE SEAM AND WRAPOUT BETWEEN WITH SMALLER NYLONS (SEE WOODEN BOATS #80 PG 105)
DOWNHAUL 1/16 NYLON
BLOCKS - HAVE 8 SINGLE, 3 DOUBLE
SAND SIDES SLIGHTLY CONVEX FOR SMOOTH V GROOVE INWARD & BOTTOM 1/32" HOLES AT TOP - FILE U-SHAPE GROOVE BEFORE HOLES FORWARD & BACK....
PAINT: WHITE - TOPSIDES, BOOM, BOWSPRIT, MAST FROM BOTTOM TO BOOM CROCK AND FROM MAIN HALYARD BAND TO TOP. RED COPPER BOTTOM. 1/16 ORANGE STRIPE ALONG LOWER EDGE OF PLANKS.
TOPPING LIFT - .020 BROWN NYLON LINE SIZED TO EYE, THRU BLOCK & MAKE AT BOOM, THEN FASTENED TO CLEAT
REEF
REEF PENDANTS - .020 (3x) NYLON LINE 1'0" LONG AT EACH FALSE SEAM
OUTHAUL TIED TO SAIL THRU EYE THEN FASTENED TO OTHER EYE WITH BOWSER
CLEAT AS
COTTER PIN
BACK
FRONT
DOUBLE
BOWSER
MAIN SHEET 1/16 NYLON
#18 SNAP SWIVEL
5/16" KEY RING TRAVELER
#18 SNAP LINK
JIB SHEET
32 3/4" FOOT
13 5/8" FOOT
SHACKLE #12 FISHING SWIVEL
CHAIN 14 LINKS/INCH HELD TO EYES WITH SMALL WIRE RINGS
5/16 DIA TRAVELER FROM KEY RING
BOBSTAY & BOWSPRIT SHROUD .020 BLACK NYLON LINE SIZED TO EYES
U.S. BOAT & SHIP MODELER
Plan No: US3871-B



FULL SIZE PLANS AVAILABLE – SEE PAGE 78

and mark along the walls at the deck, and trim them. Seal all the parts with two coats of epoxy and sand. The floors were glued in first with quick-set epoxy, then the walls on top of them. Clamp to the deck framing with clothespins, taking care all your joints are water tight. When it's dry, make a small fillet of epoxy in all corners. Sand the edges flush with the deck framing.

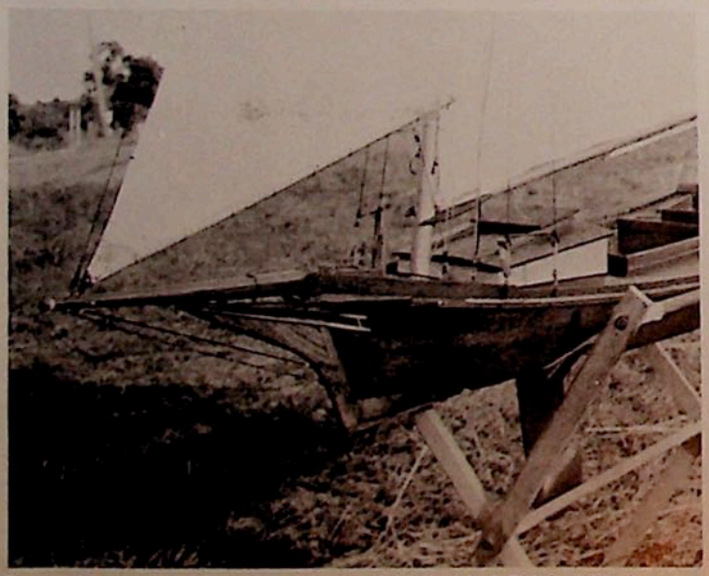
The space between Frames 2 and 3 is the radio compartment. Apply a fillet of epoxy to all the frame and side joints in this area to be sure it's water-tight. Glue floors made of scrap plywood to the chines and keel as needed for your radio installation.

The mast tube is made of 3/4-inch o.d. copper tube 2-3/4 inches long. Epoxy a 5/8-inch diameter disk of 3/32 plywood in one end to plug it. Rough up the outside of the tube with sandpaper and glue it in place. It should protrude 3/32 above the top of the deck.

The rudder hinges are 1/16 diameter cotter pins 3/8 long. Drill 1/16 holes at the locations shown and use super glue to hold the cotter pins in place. A piece of #12 copper wire 4 inches long was used for the hinge pin. Some of the insulation stripped from the wire made the caps on the hinge pin.

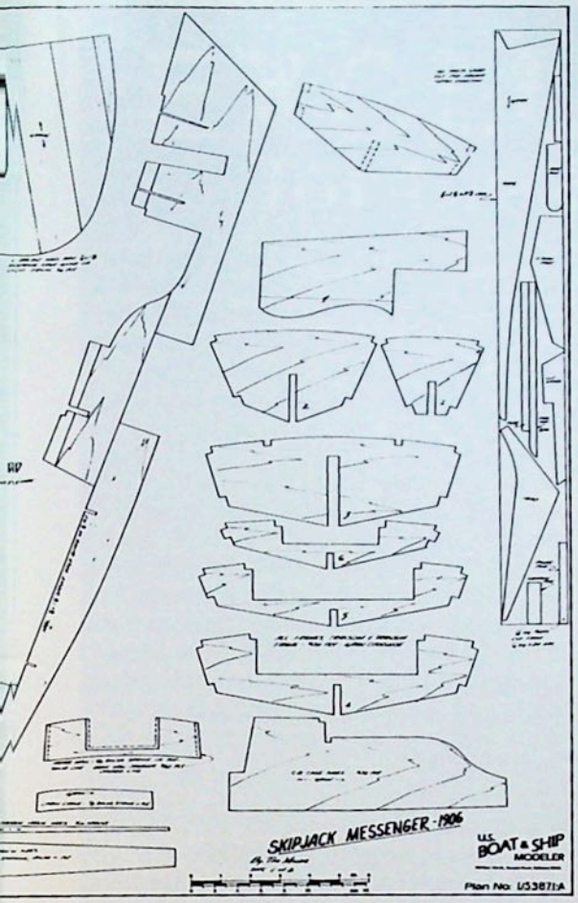
Glue the completed skeg assembly to the hull with slow-set epoxy, making sure the sternpost is vertical.

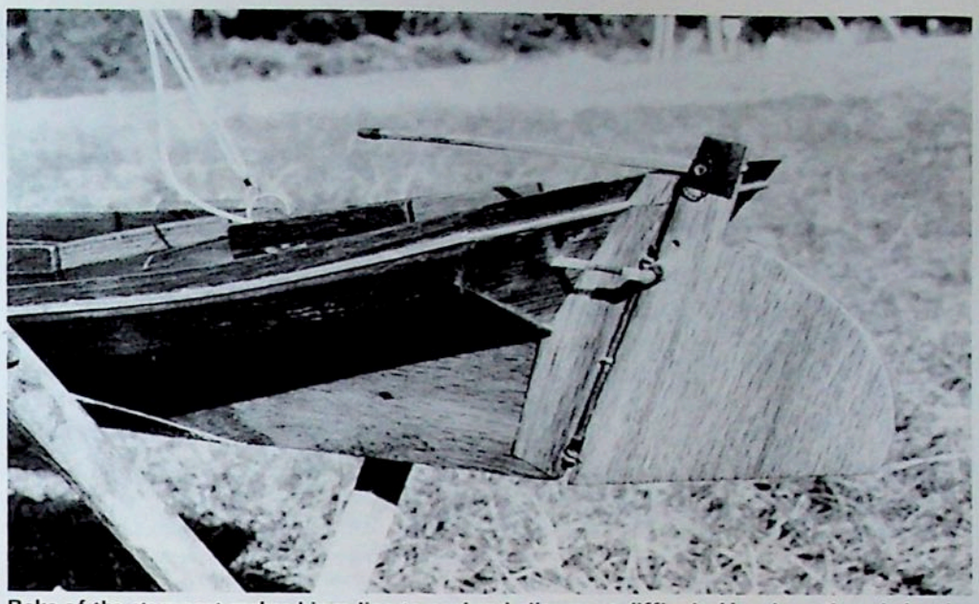
The radio installation will vary according to the equipment used. Drill a 3/16 hole in each frame just below the deck beams at the locations shown for the pushrod tube. The center of the transom hole is shown on the plan. Drill this from the outside, aiming for



Bowsprit goes from four, to eight, to sixteen sided. Tricky! Work carefully, it earns lots of compliments. Note forefoot chunks.

Rust on model is real. Model is sailed mostly in salt water. Best to use stainless steel for main and jib horses.





Rake of the sternpost makes hinge line-to-pushrod alignment difficult. Use short threaded rod and ball link to get free movement.

the hole in Frame 6. Thread the outer pushrod tube through the frame holes, leaving 1/8 inch protruding from the transom and 1 inch in front of Frame 3. Epoxy solidly in place, being sure it won't leak at the transom.

Attach the male part of a ball link to the rudder using a 1/4-inch diameter round spacer. Put the female part on the pushrod and slide it in the outer tube. Snap the link onto the ball and check for free operation of the rudder. Mount the servo and use a clevis or ball link to connect the pushrod. Install the sail control unit if used. The receiver and battery pack are held in place with rubber bands attached to small hooks. A mount for the switch is made of 1/4 x 1/2 spruce, located under the hatch cover.

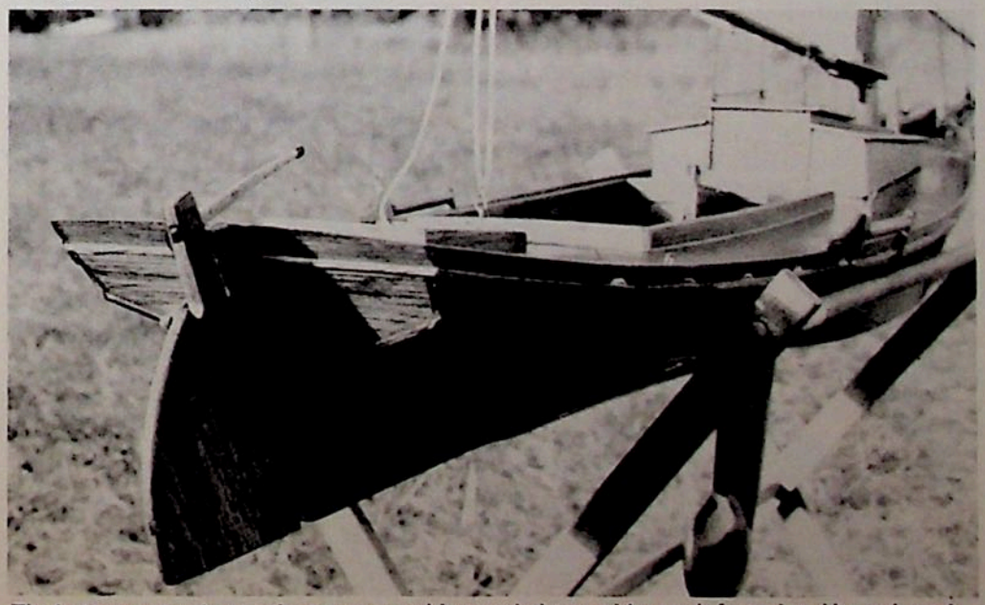
The lead weights that make up the bulb are easy to make but require extreme caution because of the burn hazard presented by the molten lead. I sent the wife and kids to the movies so I could concentrate on what I was doing and not worry about them. Large fishing sinkers can be found at marinas that will make the bulb by sawing in half, avoiding the melting of lead.

The tools needed are the kitchen stove, a large cast iron or heavy aluminium frying pan (don't use the teflon or no-stick kind) and a large spoon with a dish the same size as the keel bulb on the plan to use as the mold. You will need two pounds of lead.

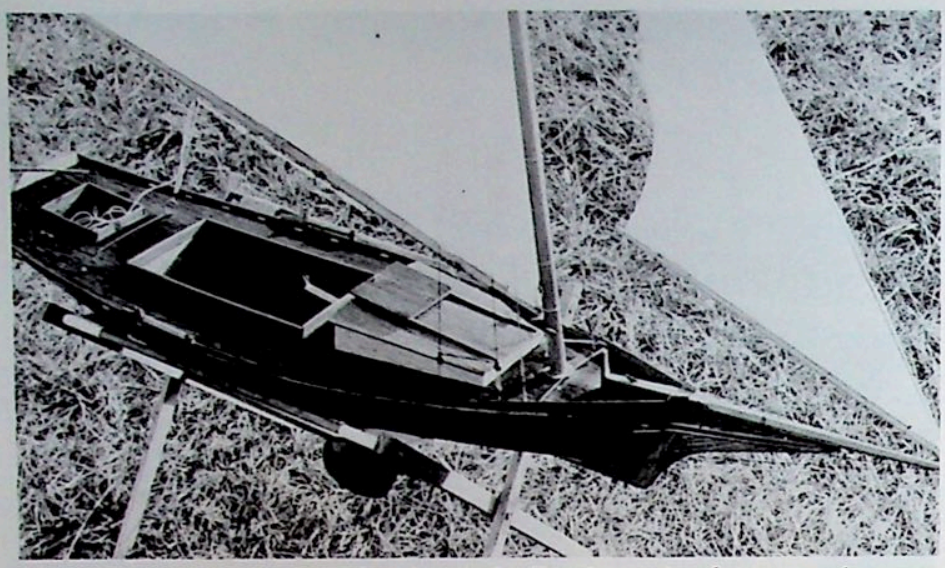
Put the frying pan on the stove and set the spoon in the pan, propped up on the edge so the dish is level. Use some steel weights or rocks to keep the spoon from sliding or tipping. Cut the lead into small chunks that will fit into the spoon. Put some lead in the spoon and turn the burner on high. Stay away from the lead while it is melting as lead often contains air pockets that will explode when heated, sending hot lead all over the place. When the lead has melted, use tongs to add more lead to spoon. Don't get your hands anywhere near the spoon! Back off and let it melt. Keep adding lead and letting it melt until the spoon is as full as you can get it. With care, you can fill the spoon slightly higher than the sides. When the spoon is full, turn the burner off and go do something else for an hour while it cools. When the lead has completely solidified, put it in tap water and dump it out of the spoon. Make two of these weights. A block plane was used to clean up the edges and backside of the lead. Sand the surface smooth.

The bulb halves are attached to the arm with two 3/4-inch long wood screws. Drill pilot holes all the way through and countersink for the screw heads. Use quick-set epoxy to assemble the bulb halves to the fin. The screw holes and gap beween the lead bulb halves are filled with auto body putty. Build it up a bit so you can round off the edges. Install the screw eye in the front edge, a screw will pass through this and into the keel to hold the ballast keel in its slot.

The last thing to do before the deck goes on is to add ballast of scrap lead. Measure 1-1/8 inch up from the heel of the stem and mark the waterline on the



The bottom extends past the transom and is rounded to avoid a weak fastening. Use a shaped sanding block to make scuppers in rail.



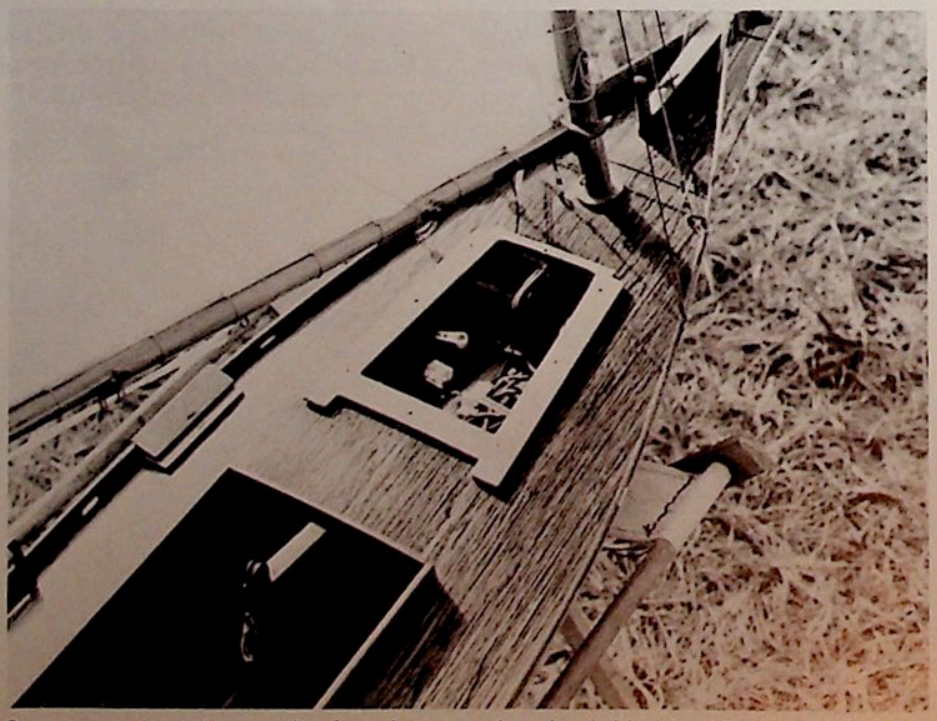
Jib horse fits into holes in rail with key-ring traveler. Keep horses clean for easy traveler movement. Tie free end of main sheet to cleat in standing well, trim with bowser.

face of the stem; the heel of the Transom is the waterline at the rear. Install the ballast keel, stick the mast in its tube, the radio in place, and pile on all the parts needed to finish the boat. Float the model and add lead as necessary to sink it to the waterlines at the stem and transom. The original model took two 1-ounce tire weights, one being glued to the transom on each side of the keel. Let it float for about an hour to see if anything leaks. If all is well, give the entire inside of the hull two coats of polyurethane varnish or paint. Try not to get it on the top surface of the deck framing.

The deck is made of 3/32 plywood 38 inches long and 12 inches wide. Lightly mark the centerline on the plywood and transfer the pattern on the plans to the plywood. Drill the 3/4-inch hole for the mast, cut out the deck and openings and slot for the keel at the front.

I made slits the full length of the deck with a razor knife and metal straight-edge to simulate the deck seams and make the deck easier to bend to shape. Starting from the centerline, the slits should be cut full length with enough pressure to cut slightly into the second layer of the plywood. Space the slits 1/2 inch apart. The slits will fill with epoxy later when the deck is sealed, simulating the deck planks.

Fit the deck to the model, trimming the notch at the rear to fit the sternpost. Use rubber bands to hold the deck in place on the hull and mark the underside of the deck so you can trim it close to the proper size. The plywood will have a tendency to buckle up in the middle under pressure of the string binding if it overhangs the sides. Leave the rear edge long to allow trimming to the angle of the transom.



Servo tray and switch screwed to floor, battery and receiver held with rubber bands. Use sponge under radio to control any water that gets in.

The plywood won't take the deck curve easily, so soak it in water for about a minute then dry off the excess water. Put the deck on the hull, but don't glue yet. Use rubber bands and string wrapped around the hull to squeeze the deck tight to the deck framing. Look inside to check for buckling, and trim the wide spots if it is. I used a whole ball of kite string to hold the deck in place. Let it set for 24 hours to let the deck take its new shape.

Fill the hull with styrofoam beans for floatation and use slow-set epoxy to glue the deck in place. Spread epoxy on the framework and the entire underside of the deck. Position and bind the deck in place as you did before, making sure it's tight to the sheers, transom and all around the deck openings. Let it set overnight, then unwrap and trim the rear to the angle of the transom and sand all the way around. Trim and sand the deck openings. Sand the deck and seal with two coats of epoxy, well sanded between coats.

The coamings for the standing well and hatch are made of 5/8 x 1/8 teak. Cut the sides to fit first, then fit the ends between them. The top and bottom of each piece is curved to match the sheer and deck curve. Use quick-set epoxy to seal and glue them in place.

Trim for the centerboard case is 1/2 x 1/8 and 3/32-square teak. Make the top first, cutting a notch to clear the post. Sand the 3/32-square to a quarter-round shape for the rear corners. Seal and attach with quick-set epoxy. Cut a notch in the post 3/16 inch wide, then use a small square file to clean up the notch. The sheave was made from a piece of 3/8 dowel.

Framing for the cabin is 1/4-inch spruce, Use the dimensions given on the plan to lay out the locations on the deck then glue the parts on with quick-set epoxy, clamping with plenty of clothespins. A cover made of 3/32 plywood is held in place with 10 small screws. Use foam tape and commercial antenna and switch exits to keep water out.

I used 1/8 inch hard balsa for the cabin walls. Make patterns from the plans and cut out the sides, front and rear. The corners are mitered, so no end grain shows at the corners. Cut the rear doubler from 3/32 plywood. Fit the cabin sides, ends and doubler together around the deck frame. Make sure you have a neat fit at the deck, then assemble with super glue. Be careful you don't glue it to the deck frame. Add the roof beams of 1/8 x 3/4

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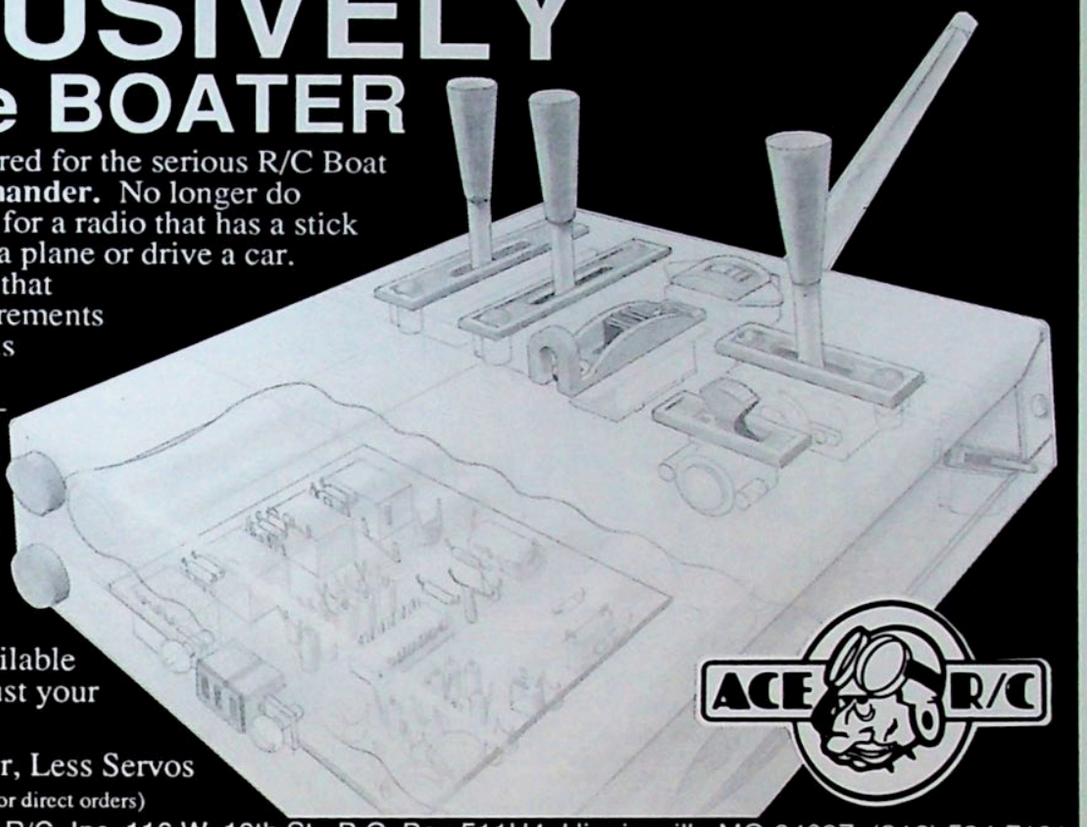

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spruce and corner braces from 1/4 square spruce.

These corner braces are made short enough to clear the deck frame and radio cover. Block sand the top of the cabin and seal the walls with quick-set epoxy.

Make the roof of 3/32 plywood. Scribe with a straightedge and razor knife as you did the deck, making the cuts 3/8 apart. Sand the top and edges of the roof and glue in place with slow-set epoxy. The sides should have equal overhang as well as the front and rear. The opening in the roof should line up with the opening in the rear wall. Rubber bands and string binding were used to hold the roof in position while the glue sets. Have the cabin in place on the deck and wrap the binding around the whole boat so the cabin won't be squeezed out of shape.

The sides for the sliding hatch cover are cut from 1/16 x 1/4 x 6-5/8-inch spruce. Rails of 1/16 square spruce, 5-1/2 inches long, are super glued to the top inside edge. The sliding hatch is a 3-inch square of 3/32 plywood, and the lift doors are 1/8 x 5/8 x 2-7/16-inch teak. A piece of mahogany, 1/16 x 3/16 x 7 inches, was used for door trim. Sand and seal the hatch sides, hatch cover, lift floors and door trim with quick-set epoxy.

Super glue the hatch sides to the roof with their inside edges flush with the cut out and the rear edge flush with the outside of the rear cabin wall. Make sure they are parallel to each other.

Hold the hatch cover in the closed position and mark the location of the side rails on the underside of the cover. Add the spacer and cap, then trim and sand the slot so the hatch cover will slide down the side rails easily. A rather loose fit is required here so the cover will slide open when it is wet and swells up a little. The radio switch was located under the hatch cover.

With the hatch cover slid foreward, add the door trim to the rear wall with super glue. The trim should overhang the door opening by 3/32, completing the groove for the lift doors. Miter the corners and trim flush with the top of the side rails. Trim the lift doors so they easily slide down the groove and the hatch cover closes over them. Then close the hatch cover so the rear edge is even with the rear edge of the roof and add a 1/4 square x 1/2 long stop. Drill a 1/4-inch hole for the galley stack.

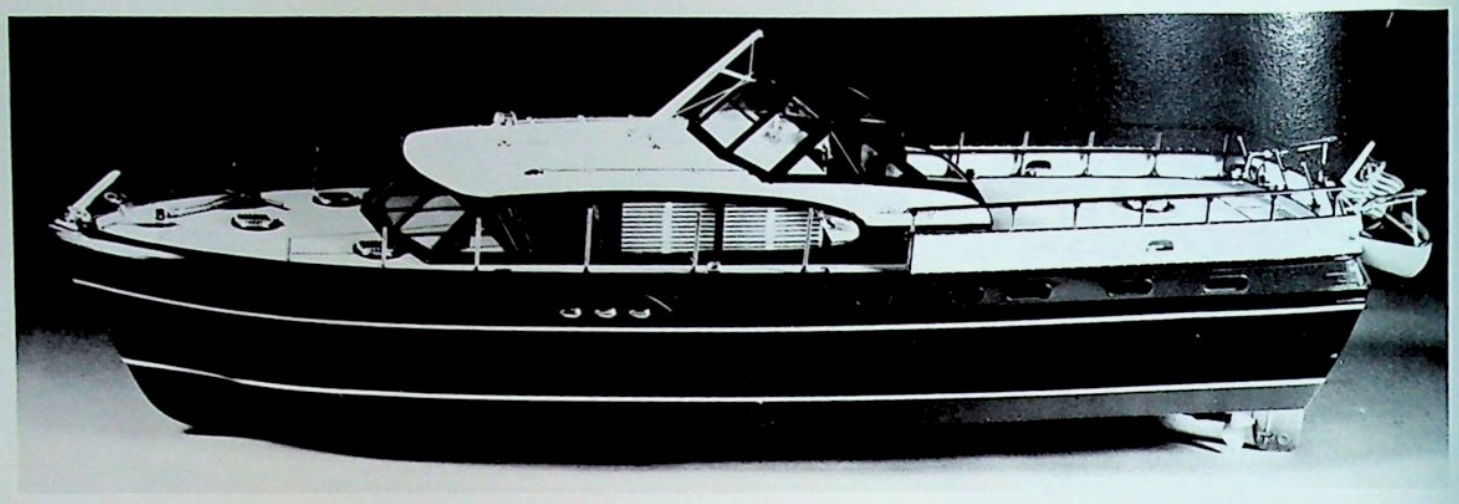
The bowsprit is made from 5/8-square spruce 14 inches long. Choose a stick with fine, straight grain and no knots at all. Notice the end grain and set it so the anular rings are most nearly vertical and mark the bottom so you can keep track of it. Now look closely at the side grain and notice the angle it tends to run. Match it with the grain direction shown on the plan and make an arrow on the bottom pointing foreward. Do all carving in the direction of the arrow to avoid splitting or pulling the grain. Mark the centerline down the top.

Use a block plane to shape the bowsprit. Lay out the taper of the top on the sides and plane from the middle toward the ends. Lay out the side tapers on the top and bottom and plane to shape. Sand smooth with 150- and 220-grit sandpaper.

The block plane was set for a very thin cut to make the 8-sided section. Shave off the corners at a 45-degree angle until all the flats are the same width. Use a razor knife to trim the entry to a pleasing curve, then draw file the flats with a small swiss file.

NOTE:

Because of space limitations, coupled with the extreme length of Tim Miller's detailed construction article, we could not include all of it in this issue. Anyone purchasing the full-size plans and pattern prints (see ordering instructions on page 78) will also receive a reprint of the complete *article, along with a bill-of-materials list.* •



A "Classic," the 30-inch long plastic model of the 54-foot "Constellation" Chris Craft, by Lindberg. Kit includes running gear, less radio, motors.

INDUSTRY "SCUTTLEBUTT"

By RALPH WARNER . . .

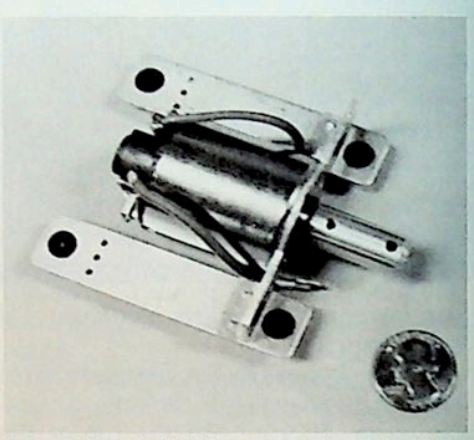
Have you been to Toledo? If not, you haven't attended the oldest and biggest R/C show in the country. I know that this may come as a shock to you as it does to most any person not familiar with modeling and the background of this show. The usual non-modeler question is, "Why Toldeo?"

Way back in 1954, the Weak Signal R/C Club found that there was a need to communicate among the small group of active R/C modelers, as some individuals had found solutions to the various problems inhibiting the crude equipment in use at the time. It was very frustrating to work long and hard on some problem and later discover that a guy in the next town or county had already found a better solution. The magazines were not able to keep up with the progress that was being made in equipment and airframe design by many active modelers from around the country.

Symposiums, at which presentations were made by modelers who had supposedly progressed in their hobby, became popular in many areas of the country. Manufacturers of the few R/C products were invited to attend at no charge so that the spectators could see the latest in commercial equipment. This whole concept evolved slowly and with many pitfalls into the various R/C shows which are enjoyed around the country today. Toledo just happened to be the site of the first well-promoted meeting of this type.

The colossal three-day Toledo show suited all modelers to a 'T' . . well . . less one 'T'!

Over the years the club has managed their activity very effectively. The site has changed several times, always getting larger and providing better facilities for display and general crowd handling. This momentum, and the fact that they were there first, is what accounts for this still being the largest show, even though it is certainly not a central location which lends itself to easy travel, especially by plane.



Direct drive single 05 power unit, with drive nut for 1/8" shaft. Hughey Boats Inc.

The show has actually become the largest convention held in the Toledo area, and it was only recently that there was ample hotel/motel space available to house the 25,000 plus spectators and exhibitors who participate.

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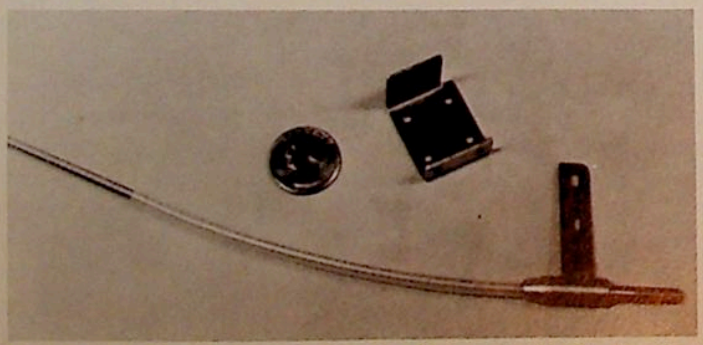
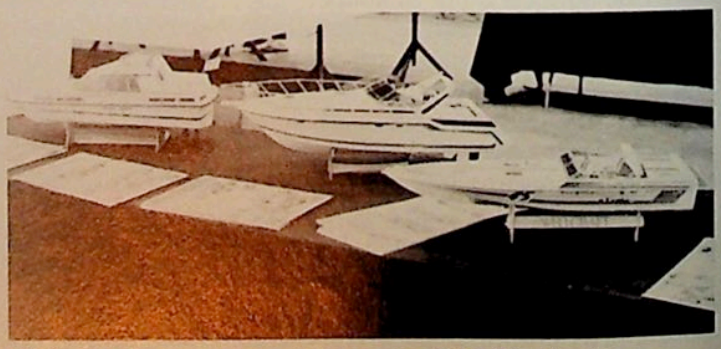


Strut assembly with "kickup" rudder brackets and lead teflon bearing unit, and 1/8 flex shaft (with 1/8 or 3/16 stub), Hughey Boats Inc.



MRC's line of very nearly ready to run boat kits (l to r): the Storebro, the newest Portofino, and the exciting Excalibur 40 Hawk.

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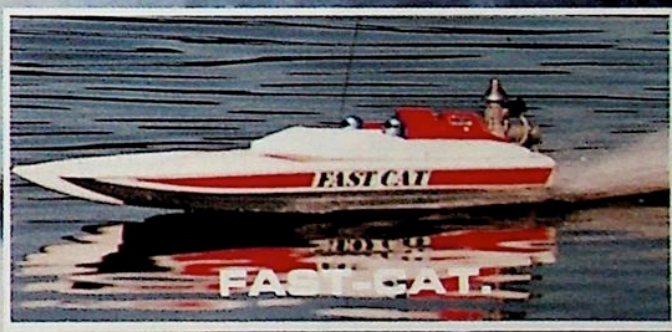

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The "Pit Area" at the October '86 ACCR for 36-600 Class Copperstate MBC. Photo by Glenn Raub.

STRICTLY SAIL

By ROD CARR

Radio-controlled model yachts are very much like their full-sized counterparts. They obey the same physical laws in their environment of wind and water. They also seem to obey the same social laws brought on by their owners and skippers. By this I mean that one boat on the water is a beautiful sight that will draw oohs and aahs from appreciative spectators. Two boats is an entirely different story; two boats is a *race*! It happens time and time again. The boats may be of different sizes, rigged differently, and skippered by people who have never actually met until. . . there they are on that same patch of water.

In my experience, about half of the people who embark on construction and outfitting of a model yacht do so while saying, "I'm not into racing, I just want something that is pretty and relaxing." I doubt that even one in ten of those folks sticks to their original philosophy. Time after time I bump into them again, and like as not it is at a regatta. There they are near the starting line, jockeying for clear air as the clock ticks down.

This background provides a reasonable justification for continuing our discussions of the sport from the perspective of the racing skipper. We will find that it makes the classification of boats easier. It will also provide a framework for describing the various characteristics of the boats as they affect sailing performance. You don't have to consider yourself a racing skipper to extract some helpful information from this series. Even if you just sail by yourself for fun, you will want your boat to perform to its potential. This is the same goal that racing skippers pursue. This article will discuss the Development Classes, the following one will deal with the One-Designs.

As I said in the last issue, I think choice of a class depends most on what is being sailed in the club nearest to you. Even if you decide to start your own club, because the Metropolis Model Yacht Club is a three-hour drive away, I strongly urge you to build or buy the class of boat that is already being sailed nearest to you. If you have a couple of boats that match the guys down the road, they will be happy to travel to your lake and hold a regatta which you can use to publicize the sport in your local. Likewise, you will have the chance to travel to their lake and enjoy sailing in a different location.

Choosing a boat like your neighbor's is sensible from another perspective. As a beginner, you will want to ask questions and get help from the other skippers. This process is much easier if all are dealing with a familiar class of boat. They will be more willing to help a newcomer if they can see that he will eventually be sailing with them, assisting in the growth of that class of boat

A close A-Class start at Hobart, Indiana, June 1984. Photo by Byron Collier.

in the local area. When your boat gets on the water, you will have your neighbors as immediate bench marks against which to gauge the trimming and tuning of your boat.

So no matter what the inherent advantages of either of the one-design or the formula/development classes, having other boats of the same class to sail with is very, very important.

FORMULA/DEVELOPMENT CLASSES

If you settle on a development class, you are embarking on a part of the sport that is quite enthralling. Nothing is more fun than going to a race and seeing all the new ideas that people have come up with since you last saw them. New boats, new rigs, new fittings, and all sorts of "go fast" stuff appears on the boats. The development classes are the home of the tinkerers, the engineers, and the theoreticians. Radio-controlled everything is often the approach taken. Sometimes the swapping of ideas is as much fun as the racing that gets sandwiched in between the technical conversations. If you want to build a boat and then sail it unchanged for five years, you'll have a tough time keeping up with the front runners in a formula/development class. But if you like to build and experiment, changing your boat as you try out new ideas, a development class will be your cup of tea.

The upper echelons of development class competition are quite involved with what I call hi-tech materials. Super-light hulls, carbon fiber, and titanium, all manner of shrink film decks and so on, put a premium on having building experience. The fundamental goal is to reduce the yacht to a bulb keel and a sail plan. The hull is seen as an obstruction to ultimate performance, for it makes waves and causes drag!

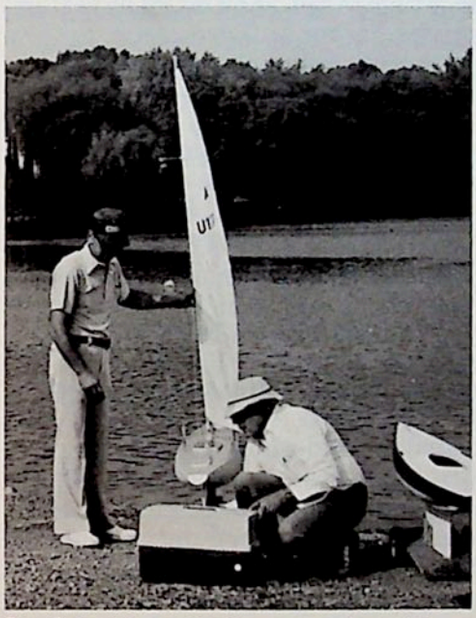
The majority of people enter model yachting for the fun of building their own boat. The development classes (sometimes called formula classes because the size of some boats is controlled by a mathematical formula)

Continued on page 76

The 36/600 Class 1986 ACCR winners (l to r): Ted Morgan, John Amen, Bob DeBow, Andy Littlejohn, and Jim Meister. Amen holds 36/600 perpetual trophy. Glenn Raub photo.

FIGURE 1—MODEL YACHT DEVELOPMENT CLASSES

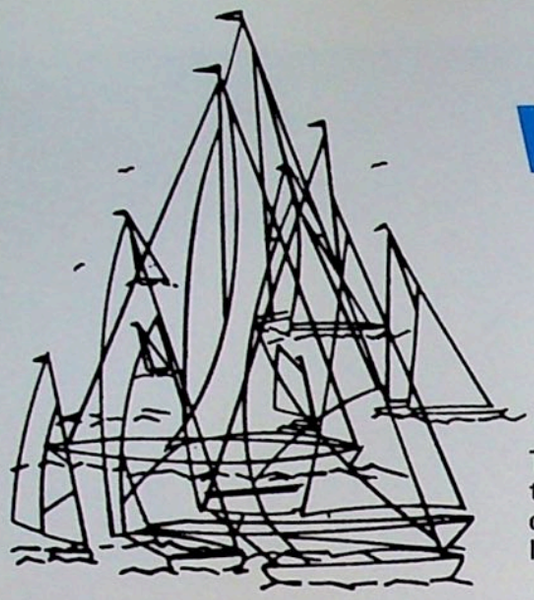
IMYRU Recognized Classes	International "A" Class International 10-Rater Class International "M" Class (Marblehead)
AMYA Recognized Classes	'J" Class Olympic One-Meter Class 36/600 Class 36/600 Mulit-Hull Class Open Class
Other Development Classes	"X" Class 36 UR (Unrestricted) "V" Class



Don Schneider and unknown partner with big A-Class boats, Hobart, Indiana.

John Amen and his winning yacht at the 1986 ACCR for 36/600 Class, Chapparal Park, Scottsdale, Arizona. Glenn Raub photo.

Ted Morgan with his Amen P-36, took Second at '86 ACCR. Note four control sticks on transmitter. Photo by Glenn Raub.



WATERLINES & CURRENTS

The author of this column intends to make all of us put on our thinking caps, with the idea that if we really understand *why* certain things are done, we'll do them better and have less problems along the way.

By FRED LEHMBERG . . .

Wasn't that Premier Issue a Humdinger? The quality of paper, color, and content were every bit as good as the *Smithsonian, Air & Space, Air Force*, and, perhaps, *National Geographic*. Please excuse the apparent self-applied pat on the back in that last sentence. . . there was no other way to put it! My wife Twyla took out a two-year subscription over my objection, for I get a complimentary subscription and am renowned for my Jack Benny personality. She said any magazine this good *has* to be an outstanding success, and the first two years (at a minimum) will be a good investment! Crestfallen, I retired from the discussion with dignity. I thought she was doing it because I had a column in it.

Looking at this first issue, the excellent article by Milt Roth, "The Model Shipwright," included a discussion of hull lines, as did "Waterlines & Currents'! The good news is that neither article contradicted the other. (*There was some close scrutiny by the proofreader! wcn*) They, in fact, supplemented each other, for the discussions were looking at "lines" from different viewpoints. If the reader gets a little confused in one discussion, looking at the other may solve his problem! The bad news? Well, not *really* bad, but I *had* planned to start some lessons on how to develop a set of lines to produce a hull design of a given displacement that would provide a given function. Two issues in a row on lines might weary the reader, unless he was a nut like me, because I am fascinated by lines. (*Better watch him, Twyla. wcn*)

I guess my interest in lines is because of my tutor, Fenwick Williams, who taught me the art while I was working as a draftsman for John G. Alden, in Boston, during The Big One. Fenwick was a naval architect working for Alden, as were Murray Peterson and several other greats of the time. At the moment, to my chagrin, their names elude me; it was a long time ago. Fenwick and Murray were known for their cruising schooners, but Fenwick was also one of the leaders in the Cape Cod Catboat school of design. . . I think the best since Dan Crosby. Fenwick wrote a lot, too, and his elusive humor tempered sometimes dry subjects. I like to think I write with his style, and hope I really do. Fenwick would show me things on Mr. Alden's time, and I would try them out in my apartment in Marblehead, where I had a drafting table. My drawings were critiqued by Fenwick, Murray, and Mr. Alden. Also, in Marblehead, L. Francis Herreshoff (the son of the Great "Nat') lived in "The Castle," and I was fortunate to spend many evenings listening to his fabulous tales of the past, amid all those Herreshoff half-models on the wall and many artifacts off famous Herreshoff yachts. I have beautiful memories of Boston and Marblehead, and of the many naval architects of the period who lived there.really beautiful.

I was living in Oakum Bay Studio, the home of a prominent artist, Arthur Kelley, who has large paintings hanging in a *lot* of courthouses, town halls, and museums in Massachusetts. A friend of mine, Anita Blaisdell, had a 12-foot pram (like an El Toro or Sabot, but four feet longer) who let me sail it alone when we couldn't sail together. She kept it in a boatyard near Oakum Bay.

One summer evening, after I got home (We both worked in Boston, and Anita must have had to work overtime) I needed some groceries, which I should have picked up on the walk home from the train. I figured it was a nice time to sail, and I might as well sail up the harbor to Town Dock, get my groceries, and sail back. I did, almost. I bought the groceries, anyway.

On my return to Town Dock from the grocer, I found the boat was perhaps six feet below dock level, tied with a bow line to the ladder. I climbed down (grocery bag in one arm) and managed to position the pram with my foot for boarding. I figured I could step far enough inboard, let go the ladder, and balance everything quickly! It started out all right, but the boat heeled a little, the boom with the lowered sail swung over, blocking my further movement, I lost balance and went over the side, just missing hitting my head on the ladder! I climbed out, wrung out my T-shirt and watched my groceries on the bottom (I don't recall any floating) as the warm air dried me. There were several men fishing from the dock, and, like good Marbleheaders, they studiously looked the other way. When I felt I didn't look too wet, I bought more groceries, asked a fisherman to hand them to me after I was aboard, and sailed back to the yard.

Putting the boat to bed, I walked home. As I entered the house, Mr. Kelley called me into the studio. As he completed a couple of careful brush strokes he muttered, "Heard you, ah, fell off your boat!" He stepped back to view his work, nodded, cocked his head my way, and finished, "That right?" I have no idea how the news beat me home.

It was a stupid thing to do, of course, but it really brought home what Fen-

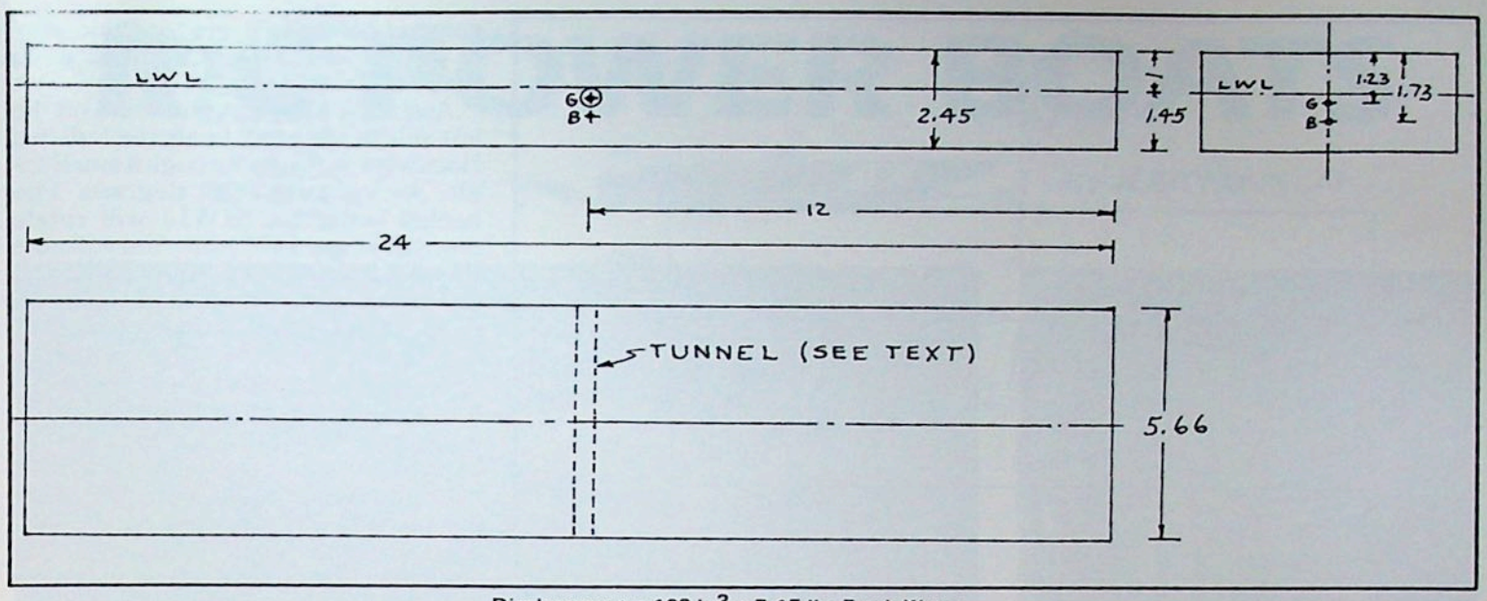


FIGURE 1 — FLAT BOTTOM MODEL Displacement = 198 in^3 = 7.15 lbs Fresh Water
Hull Volume = 333 in^3 = 7.15 lbs @ Density 36.58 lbs/ft^3

wick had been telling me about, why some hulls are "stiff" and some are "tender." A stiff hull will resist heeling moments, and a tender hull won't. The pram isn't known as being exceptionally tender, but it was certainly soft enough to litter the bottom at Town Dock. This heeling effect, also called transverse stability, is important for the determination of sail-carrying ability and rolling characteristics. In general, for a given beam and displacement (weight), a flat-bottomed boat will have the greatest initial stability (resistance to heel) and a round bottom the least. A vee bottom is in between the two.

Let's build two wooden hulls in our minds. For plans, look at Figures 1 and 2. Aren't they ugly? They wouldn't sail or power well, but they are simple to visualize. Both hulls are 24 inches long and they both have a waterline beam of 5.66 inches. They also have a displacement of 198 cubic inches of water, which we shall assume is freshwater, giving each a displacement of 7.15 pounds. They also have an equal freeboard (height from the Load Waterline, or LWL) to the top of the hull (sheer). The difference between them is that one hull has a rectangular cross-section constant for its entire length (which we shall call Flat Bottom), and the other has a circular cross-section, also constant, with the arc center on the deck surface. This hull is Round Bottom.

The hull volume of Flat Bottom for the dimensions given is 333 in.^{3}. If we scrounge the fictitious lumberyard for some yellow pine weighing 36.58 lbs./ft.^{3}, Flat Bottom will weigh 7.15 pounds and float at the design LWL, and the center of gravity (G) and center of buoyancy (B) will be as shown. Drill a level hole through the hull passing through G of a size such that the wood removed shall weigh 0.2 pounds. Also, make a thin wall tube fitting this hole that will allow a five-inch tunnel extension. Place a lead weight of 0.2 pounds in this tunnel centered on the center of gravity G. Remember, this is all in our minds, so these things are easy to do. Placing Flat Bottom in the water, it will still float on the design load waterline, right?

Now, do the same thing with Round Bottom. As its hull volume is a little greater, 339 in.^{3}, you will have to go back to the lumberyard for 35.93 density pine. With the picky-picky reputation you have in this yard you probably will be denied future entry, but that's the way things are.

We are now ready to discuss the stability of Flat Bottom. Bear in mind that

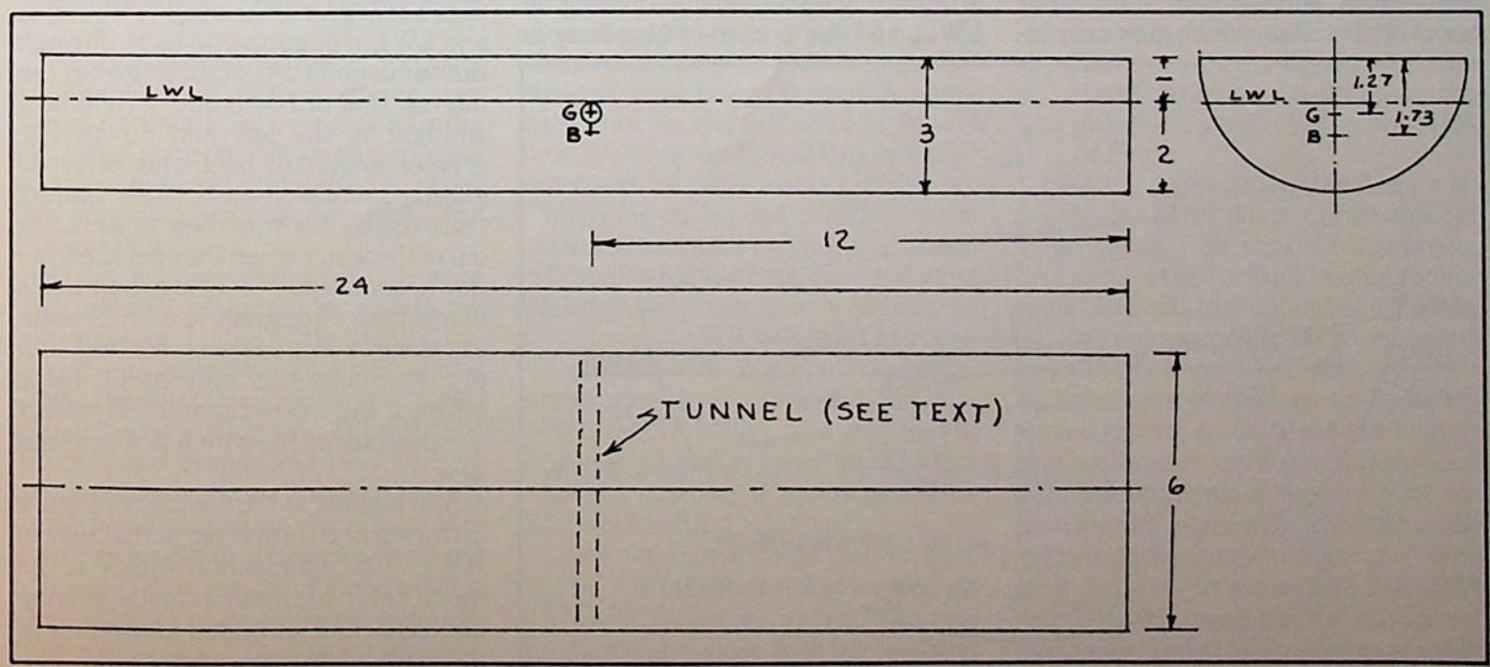


FIGURE 2 — ROUND BOTTOM MODEL Displacement = 198 in^3 = 7.15 lbs Fresh Water
Hull Volume = 339 in^3 = 7.15 lbs @ Density 35.93 lbs/ft^3

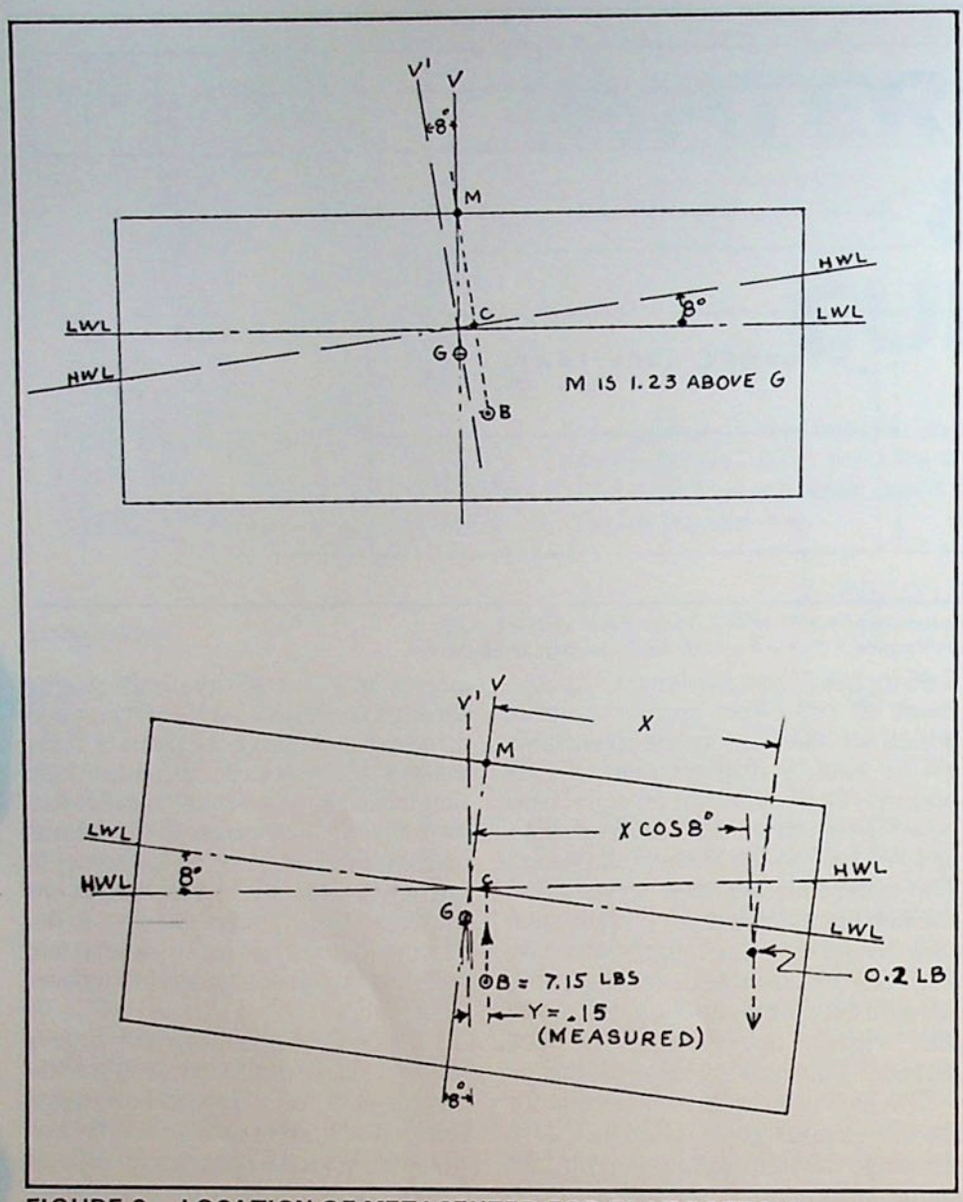


FIGURE 3 – LOCATION OF METACENTER FOR FLAT BOTTOM

these calculations are considering the model "dockside," not "underway." A hull underway is affected by its inertia, momentum, wave action, and a number of other things which generally increase its stability. Thus, the correct term is "static stability." For the present, only consider the top drawing in Figure 3. The model is floating on LWL, and the center of buoyancy is

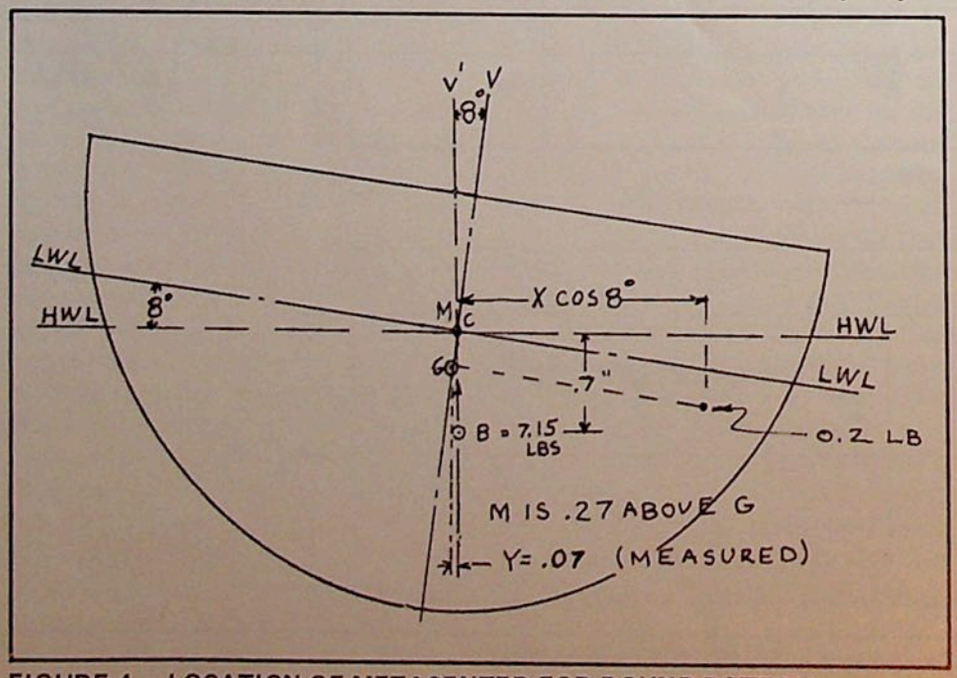


FIGURE 4 – LOCATION OF METACENTER FOR ROUND BOTTOM

somewhere directly under the center of gravity G. There are no forces to make any change.

Assume a force (such as wind on the left side of the boat) heels the hull in a clockwise direction through a small angle, for instance eight degrees. The heeled waterline (HWL) will rotate down to where LWL was. You will note that the triangle formed by LWL and HWL would be under the water on the right side, and the triangle on the left side will be out of the water. Although I am really not ready for you to look at the bottom part of the figure, and you do it on your own, you will see what happens. In other words, when heeled in this manner, displacement is gained on the right side and lost on the left! Therefore, the center of buoyancy B is shifted to the right. As B is no longer under G, the hull weight at G (now a little to the left of the hull center) is trying to right the boat, as is buoyancy, which has shifted to B, on the right side. Of course, it is now evident that you must determine the exact position of B.

Trace the portion of the hull section underwater at HWL. Cut it out with scissors. Now make several folds in the paper parallel to the HWL line. This stiffens the floppy piece of paper. Using the apex of these folds, find the balance point on a sharp pencil. Open the folds and draw a perpendicular to HWL from that balance point. Fold the paper along that line and balance on the fold. That will be the section centroid, or position of the center of buoyancy, B.

From Figure 1 you have the location of G. Draw a perpendicular from G to HWL. At this point it should be pointed out that if the angle of heel is less than six degrees, the axes V, V', HWL and LWL will appear to pass through the same point. At eight degrees, the intersection of HWL and V' will be a smidgin to the left and down. For greater angles of heel, this effect is greatly increased as G rises. Sailers truly realize the way their vessels rise out of the water when they get their rail down, sometimes showing their keels at less than 40 degrees heel! A heel angle of eight degrees was selected simply to make the movement more obvious, and will not appreciably affect the position of M, which is discussed now.

Still looking at the top part of Figure 3, draw a line from B perpendicular to HWL. The intersection with V is the metacenter M, made famous in song and verse and shrouded in mystery in the halls of Naval architecture! The

Continued on page 46

R/C POWER BOATS

By JERRY DUNLAP

Nice looking fiberglass Octura "Tom's Cat" seen at Toledo Show. Photo by Jerry, who didn't note name of builder. Naughty, naughty!

In my column in the premier issue of *U.S. Boat & Ship Modeler*, I addressed at some length what I felt was a need to provide opportunities for beginners entering model powerboat races. Stated briefly, it is my contention that beginners in model powerboat competition are not afforded the same opportunities provided new competitors in R/C aircraft or cars. In both R/C aircraft and car competition, there are classes available for beginners.

It is one thing to point out a problem and another thing to offer a possible solution. This is where *U.S. Boat & Ship Modeler* enters the picture. Our editor and publisher, Bill Northrop, has agreed to provide perpetual trophies to model boating districts, IMPBA or NAMBA , which establish a class for beginning model boaters, commencing in 1988.

U.S. Boat & Ship Modeler is not going to dictate which class or engine size. Those decisions are best made by the individual districts. Although the magazine is not going to establish the class, that doesn't mean I cannot offer some suggestions.

Based on my personal experience with offering a Beginner's Class in my home district, I think a .21c.i. (3.5cc) engine size is preferable for a Beginner's Class. Here in District 8, we offer a Beginner's Class using the .21 Outboard Tunnel Class. At our first 1987 District 8 Championship Point's Race this class drew the most entries. The outboard is a very easy way to get started in model boating. There are many fine running model tunnel boats available either in fiberglass, plastic, or wooden kits.

Since I was the one who cajoled Bill Northrop to ante up the bucks for these beginner awards, I'm also going to handle the administration of the awards for *U.S.B.&S.M.* Any district interested in obtaining a perpetual trophy for a Beginner's Class should contact me prior to December 31, 1987. The only information needed is the class that will be offered and the type of racing conducted. If this is something you think your district would like to become involved with, have your District Director contact me at: 119 Crestwood Dr., S.W., Tacoma, Washington 98498. *U.S. Boat & Ship Modeler* wants to help the beginner.

WHAT'S HAPPENING TO THE NORTH AMERICAN MODEL BOAT ASSOCIATION?

In all the years of writing model boating articles, I have not used my columns as a vehicle of expressing concerns about the operations of any of our national model boating associations. Because of some things that are happening within the North American Model Boat Association (NAMBA), which I am somewhat responsible for causing, I am going to expend a little printed space in this issue's column attempting to explain what has happened and what might possibly happen in NAMBA. As a five-term NAMBA District Director, two-time NAMBA Nationals chairman, former member of the Technical Committee, record holder, and recipient of the NAMBA Hall of Fame award, I feel I am in a position to access problems facing NAMBA.

Since its inception in 1971, Mrs. Myrtle "Mom" Coad has served as NAMBA's Executive Secretary. During this period she, along with her husband Don, has devoted countless thousands of hours of time and personal expenses

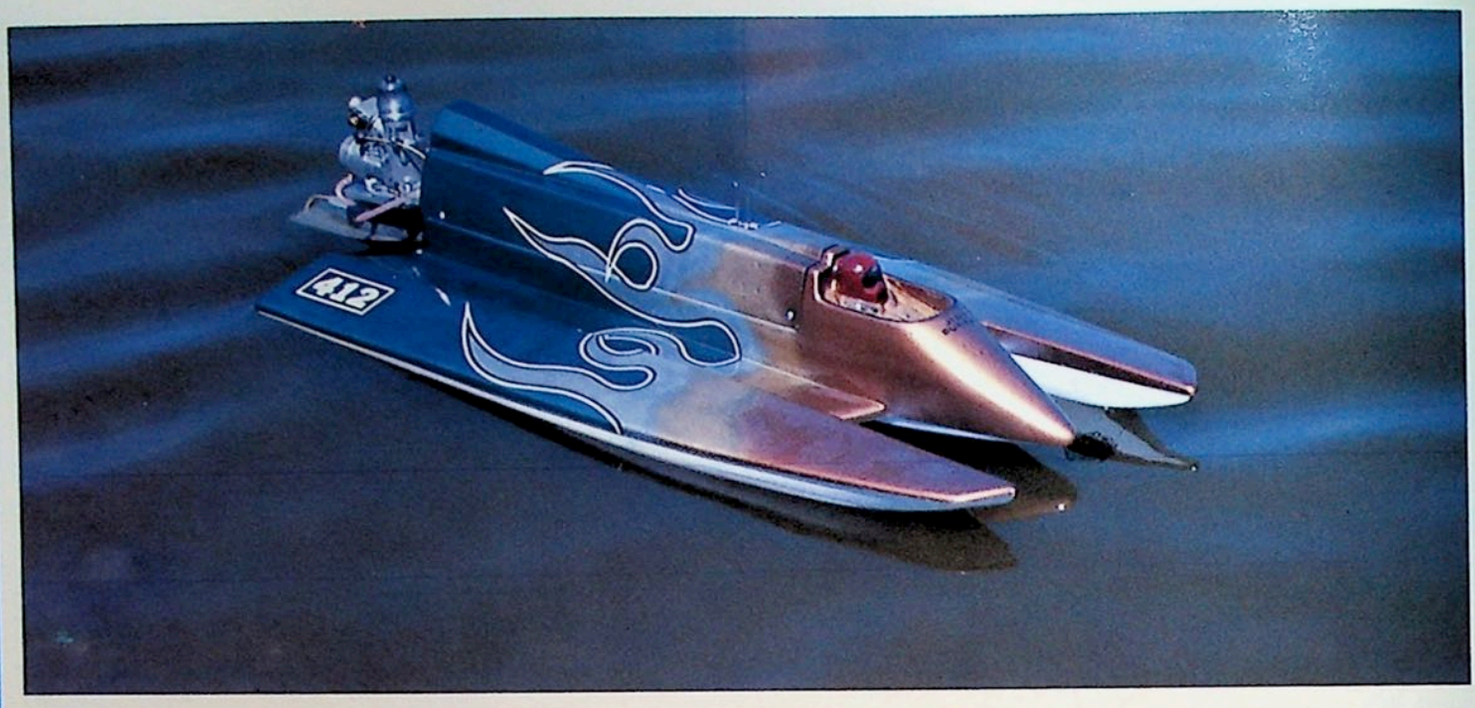
Mr. Octura Models, Tom Perzentka, and his daughter Trudy Handzel, at the 1987 Toledo Show. Tom is holding the wooden version of his "Tom's Cat."

to the operational aspects of NAMBA. The Coads took care of the "nuts and bolts" of a national organization. Obtaining the insurance, taking care of membership, certifying records, seeing the Rulebook was published, sending out the monthly newsletter, *The Propwash*, and numerous other tasks were handled by "Mom" and Don. These efforts and contributions have been recognized in numerous ways, the most significant possibly being the selection of "Mom" and Don Coad among the first group inducted into the NAMBA Hall of Fame.

Like any organization that deals with people, NAMBA has not been without its problems. Perhaps the biggest concern some of us "model boating politicians" had was the amount of influence the Coads occasionally exercised on decisions concerning NAMBA.

Differences of opinions are to be expected among those who have leadership positions in any organization. Such differing opinions, when given an opportunity for expression, can help an organization become stronger and continue to grow. To some of us NAMBA members, it seemed like the opinions of the Coads carried an inordinate amount

Continued on page 69



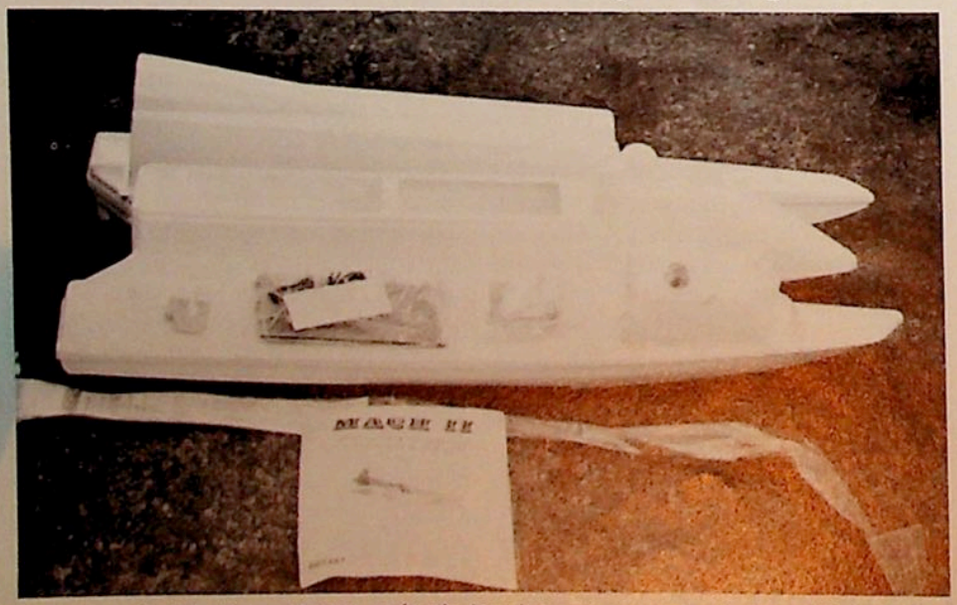
MRP's "MACH II"

By JERRY DUNLAP . . .

Since Model Racing Products, MRP(1), entered the model boating field some five years ago, it has become the nation's leading supplier of plastic model boats. MRP has an extensive line of model boats for both electric and gas power. For the model boater more interested in running than building, plastic models are definitely worth serious consideration.

My first experience with an MRP model boat was five years ago when the MRP Mach I tunnel was released for the K&B 3.5 Outboard. In fact, one of MRP's color ads includes a picture of this boat (#179). In the first race with that particular boat, my son Paul (10 years old at the time) placed third and fourth in two races at Legg Lake, California. I've also had an opportunity to run the Python canard hydroplane and four of the MRP electric models, the Sport Vee, Sport Hydro, Pantera, and Electric Offshore Cat. All of these models were reviewed in my column in *Model Builder* at one time or another.

The Mach II would be considered an ARF (Almost Ready to Float) model. It comes as a complete kit with motor mount, fuel tank, and hardware for rigging the steering and throttle control. An assembly and running booklet is included, telling what is needed to get the boat from the box to the beach.



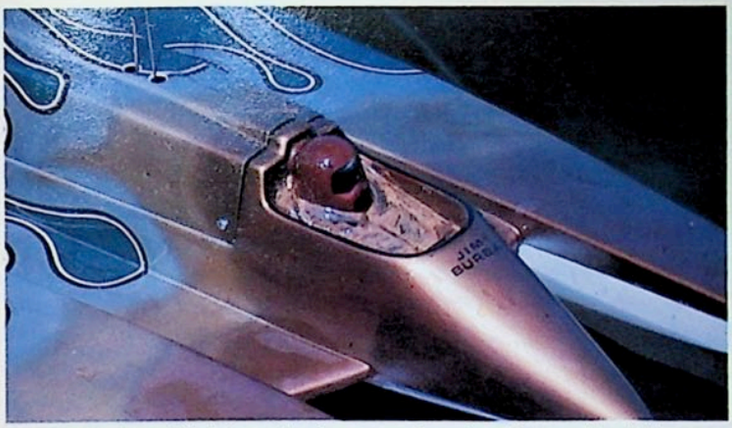
A glance at the kit tells you that it won't take long hours to construct the boat. Kit includes all hardware needed to rig the boat for running.

Because the Mach II is completely built, the only steps for the modeler involve installing the hardware and painting. I'm not going to spend much time discussing the hardware installation because it is more than adequately covered in the instruction booklet. A drill, some screwdrivers, and Allen wrenches will pretty much take care of the tools needed for completing the hardware and radio installation steps.

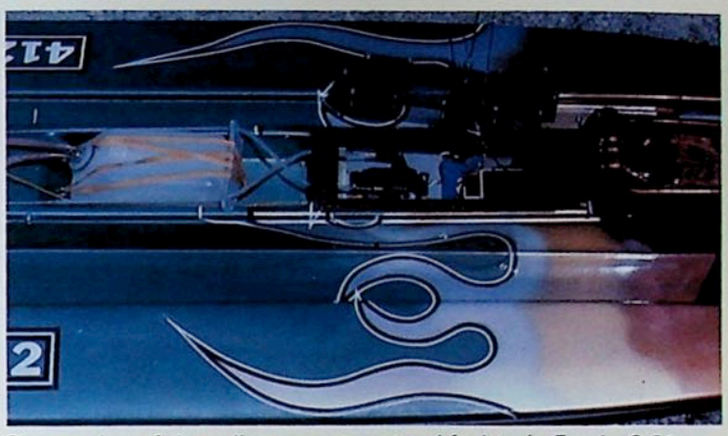
Servo selection for steering should be mentioned. The K&B 7.5 Outboard requires the use of a heavy duty servo to provide the needed power to turn the unit. In this model, I used a Futaba S-31(2). However, a Futaba S-34 or EMS Eagle(3) would also provide the needed muscle to pull the boat through a corner.

The paint used for the Mach II was Parma Paint (5) for Lexan R/C car bodies. This paint is made especially for plastic. Those of you who have seen my typical paint jobs know I didn't paint the Mach II. It was painted by Jim Burba, commodore of the Puget Sound Model Boat Club. As can be seen in the photos of the boat, Jim did a really nice job with a "trick" paint scheme. After using the Parma Paint, Jim then applied three coats of K&B Super Poxy clear to the model.

Running a tunnel boat requires some experimenting with props, prop depth,



The driver is molded into the front cowl, and as shown, should be painted to show it as such.



Closeup shot of the radio compartment and fuel tank. Futaba S-31 servo used for steering.

engine angle, and turn-fin size and location. I would make the following recommendations for starting points. Use an Octura X-450 prop(4). Be sure to balance the prop prior to running. Set the centerline of the prop even with the bottom of the sponsons. For engine angle, start with a neutral setting... neither tucked under nor kicked back. I would recommend the turn-fin be increased in size from the template provided in the instruction manual. Make the fin a half inch wider and a half inch deeper. Keep the same basic shape as the template. The turn-fin should be bent so it is canted about 10 degrees into the tunnel.

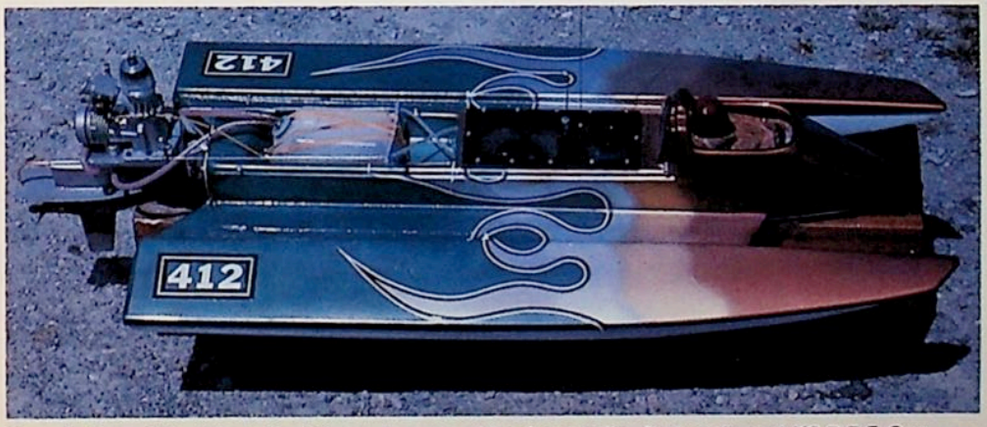
Another addition to our Mach II were the inside tunnel ramps that I've used on many of my tunnel boats. The size, shape, and position of these inside tunnel ramps are shown in one of the photos. The ones on this boat were made from solid balsawood, painted, and "Hot Stuffed" to the front of the tunnel.

Initial test runs with the Mach II showed the boat to have average straightaway speed. It was necessary to back off some in the corners to keep the boat from spinning out. The test runs were done with the small turn-fin shown in the instructions. The larger turn-fin should help improve the cornering. The guys in my area who are competing with the Mach II are running larger turn-fins. The boat does react to changes in motor angle and prop depth. Achieving maximum performance with the Mach II, or any tunnel hull, requires a great amount of experimenting with motor angle and depth.

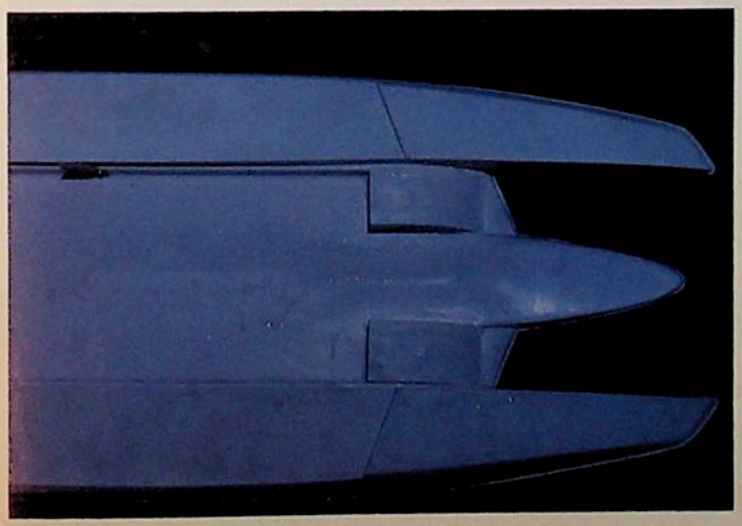
In summation, I believe the MRP Mach II Tunnel provides an entry-level model boat for the 7.5 Outboard. The "total package" concept is most advantageous for a beginner because it removes the need to shop around for the required running hardware from other sources. An ARF boat makes it much easier to get a model boat in the water. The MRP Mach II will provide the new model boater the opportunity to learn how to run and trim a model tunnel hull.

Manufacturer's List:

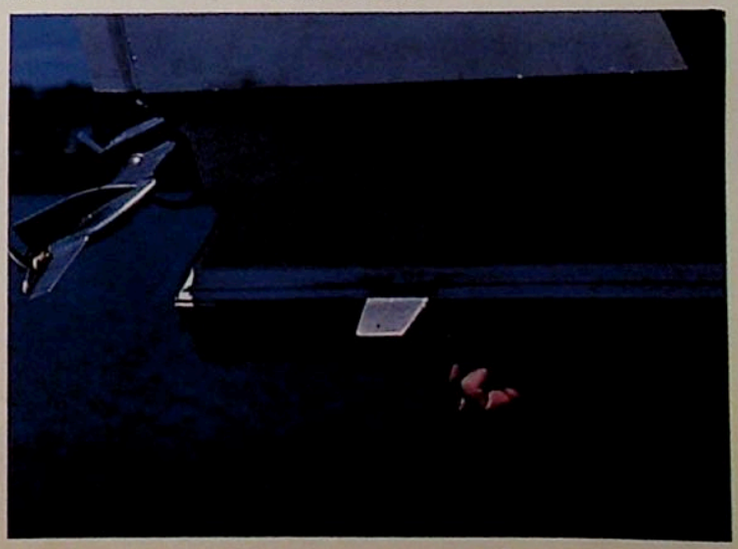
1. Model Racing Products, 18676-142nd Ave. N.E., Woodinville, Washington 98072.
2. Futaba Corporation of America, 555 W. Victoria St., Compton, California 90220.
3. EMS, 6175 Palo Alto Dr., Anaheim, California 92807.
4. Octura Models, Inc., 7351 N. Hamlin Ave., Skokie, Illinois 60076.
5. Parma International, Inc., 13927 Progress Parkway, North Royalton, Ohio 44133. •



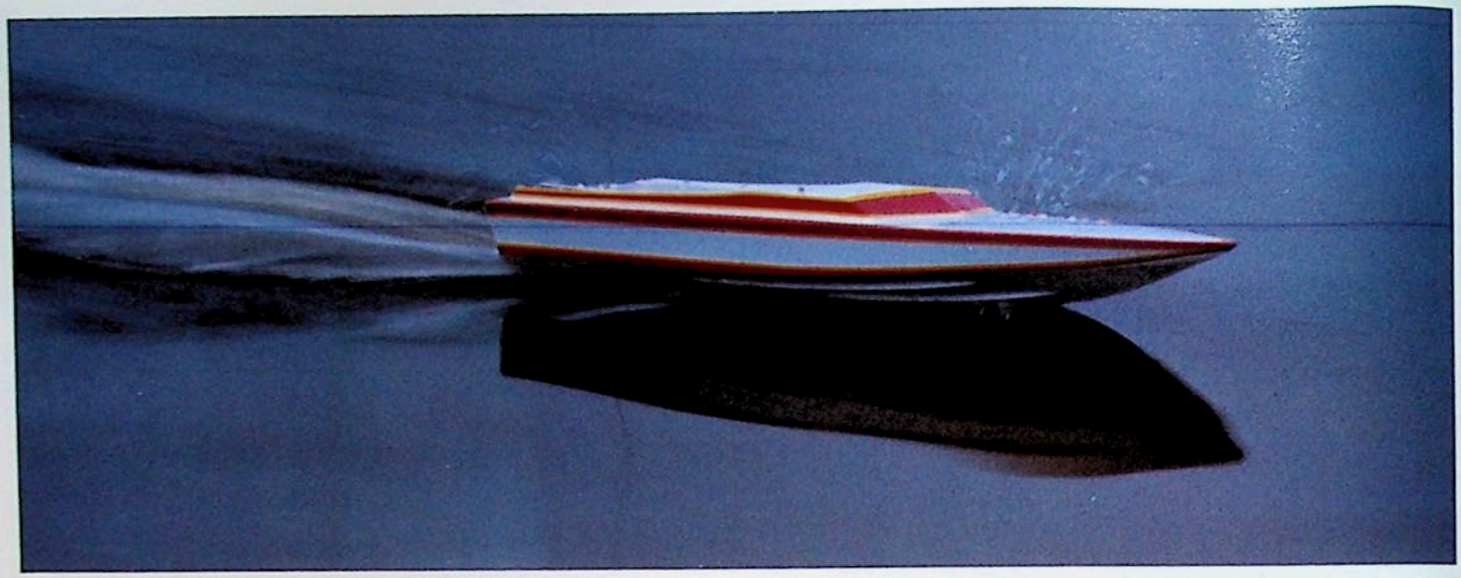
Overall shot of the Mach II with cowl removed to show radio, fuel tank, and K&B 7.5 Outboard. Exceptional "trick" paint job by Jim Burba, using Parma plastic paint.



Tunnel ramps were fabricated and installed to assist the cornering. See text.



An enlarged turnfin will help improve cornering. See text for details.



DUNLAP'S *"Electric Ski Cruiser"*

By JERRY DUNLAP . . . If you already have an R/C formula race car or off-road vehicle with 05 motor and seven-cell battery pack, you'll soon be running this boat constructed of regular hobby plywood. It's fast!

A REINTRODUCTION

My "05 Ski Cruiser" was originally published in Model Builder *a couple of years ago. The boat is still being run on a regular basis at many of our club's fun runs and also at District races when they have an electric class for the kids.*

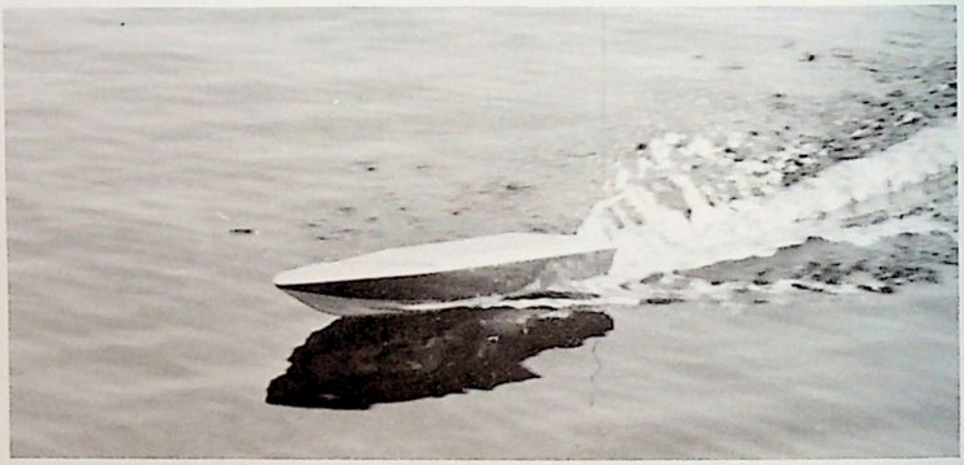
It has served as a test bed for various electric motors, speed controllers, and props. The original boat, built from balsa, was converted to gas power. An O.S. Max CZ 12, intended for R/C cars, provided plenty of zip for the semi-vee hull.

The 05 Ski Cruiser would make an ideal building project for the individual who already owns an R/C car, because the electric motor and speed control could be used in the boat.

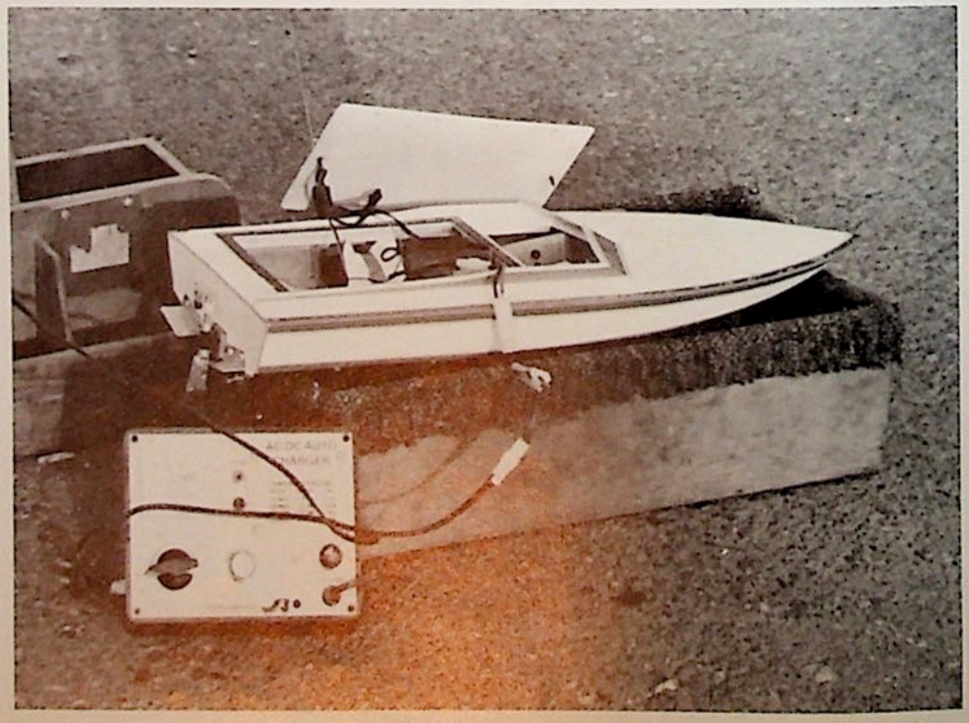
I persuaded (begged) our editor/publisher, Bill Northrop, into re-releasing the construction article and plans through U.S. Boat & Ship Modeler, *because there really hasn't been all that much in the way of construction articles and plans for this type of boat. The design, a ski cruiser, has been around for many years and continues to be a very popular design for full-size boats.*

One new thing that has come along since the boat was originally featured is a line of props for electric boats from Octura Models. The Octura X-427 works very well with stock 05 electric motors.

The 05 Ski Cruiser has proven to be a very durable and enjoyable model. It would make an excellent model boat for the person wishing to build a model from plans. Have fun!

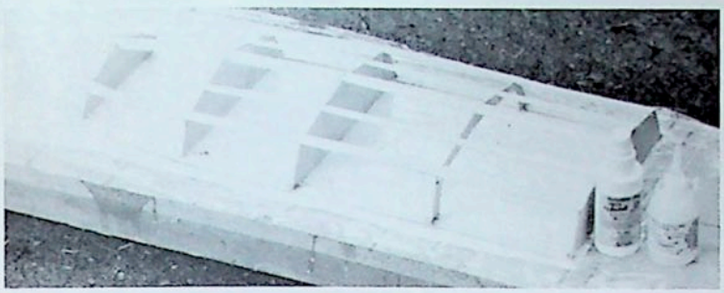


Balsa version of the "Ski Cruiser", with flat deck, proving that electric powered boats can really move out!

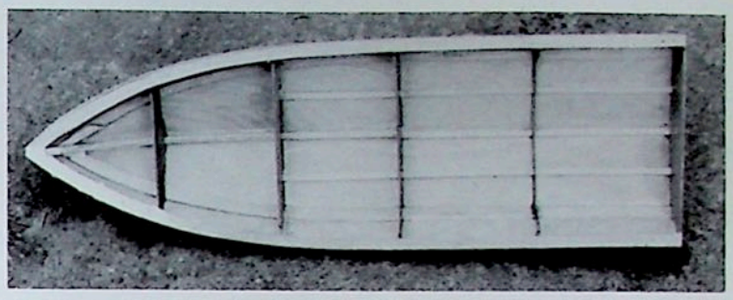


"Fueling up" between runs. An Astro Flight AC/DC Auto Charger pumps in more "juice."

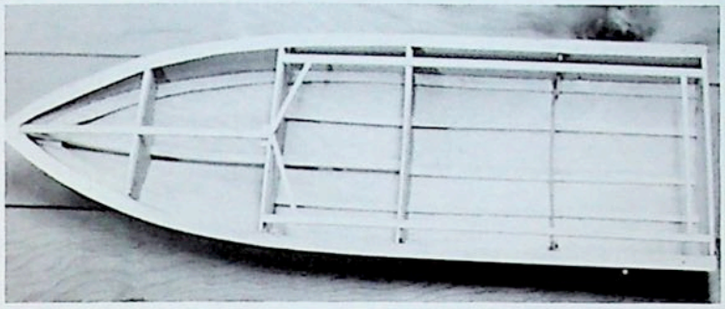
The 05 Ski Cruiser was designed for the new 05 Electric Standard



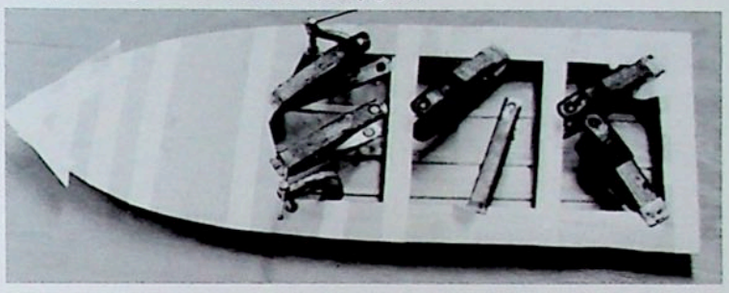
Framework is assembled over plans on a true, flat surface. Cyano glue makes a fast job of it.



Hull is sheeted and ready for deck bracing. Now is the time for a waterproofing coat of thinned epoxy glue.



Deck framework in place and ready for deck sheeting.



Deck sheeting is first waterproofed on the underside, then epoxied to framework. Clamps and masking tape hold it in place.

7-Cell Class adopted by the North American Model Boat Association for 1985. The hull requirements for this class are very simple, "Hull. . .all boats will conform to either NAMBA Deep Vee or Monoplane specifications." Designing model deep vee and monoplane hulls is something I know a little about. It was simply a matter of deciding the type of hull I wanted to design.

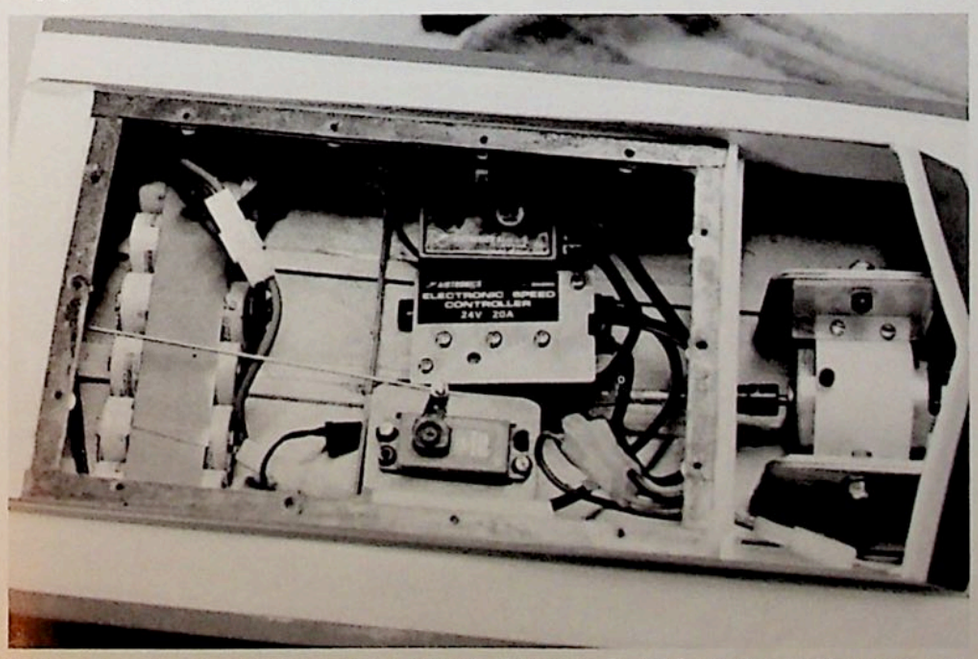
I settled on the Ski Cruiser theme because it is one of my favorite full-scale boats. Ten years ago I designed and built a similar type of boat for .40-size inboard motors. That boat, called the "Deep Vee Day Cruiser," was published in *Flying Models* and proved to be a very competitive boat at that time. Although I designed the basic hull of the 05 Ski Cruiser without referring to photos of any particular full-size boat, the deck and cabin are what might be termed "sorta scale" of the Schiada 20-foot Ski Cruiser. The paint scheme for the model was based on a picture I saw of the Schiada Ski Cruiser in *Powerboat* magazine.

In designing the 05 Ski Cruiser, I attempted to incorporate ideas that I had been using in other electric boats and improve areas where I felt some electric boats had problems. None of the boats I had run prior to building the 05 Ski Cruiser had problems with basic hull design. The biggest problems I encountered were in radio and motor installation. Most of the electric boats I'd run seem to operate on the belief that because it's electric it won't get water in the radio compartment. That belief doesn't hold water (*Very funny, Jerry! wcn*), and radio compartments of my electric boats were full of the liquid upon which they were being operated. The method of attaching the radio compartment top on the 05 Ski Cruiser helps insure a dry radio compartment. That will be discussed later in the article.

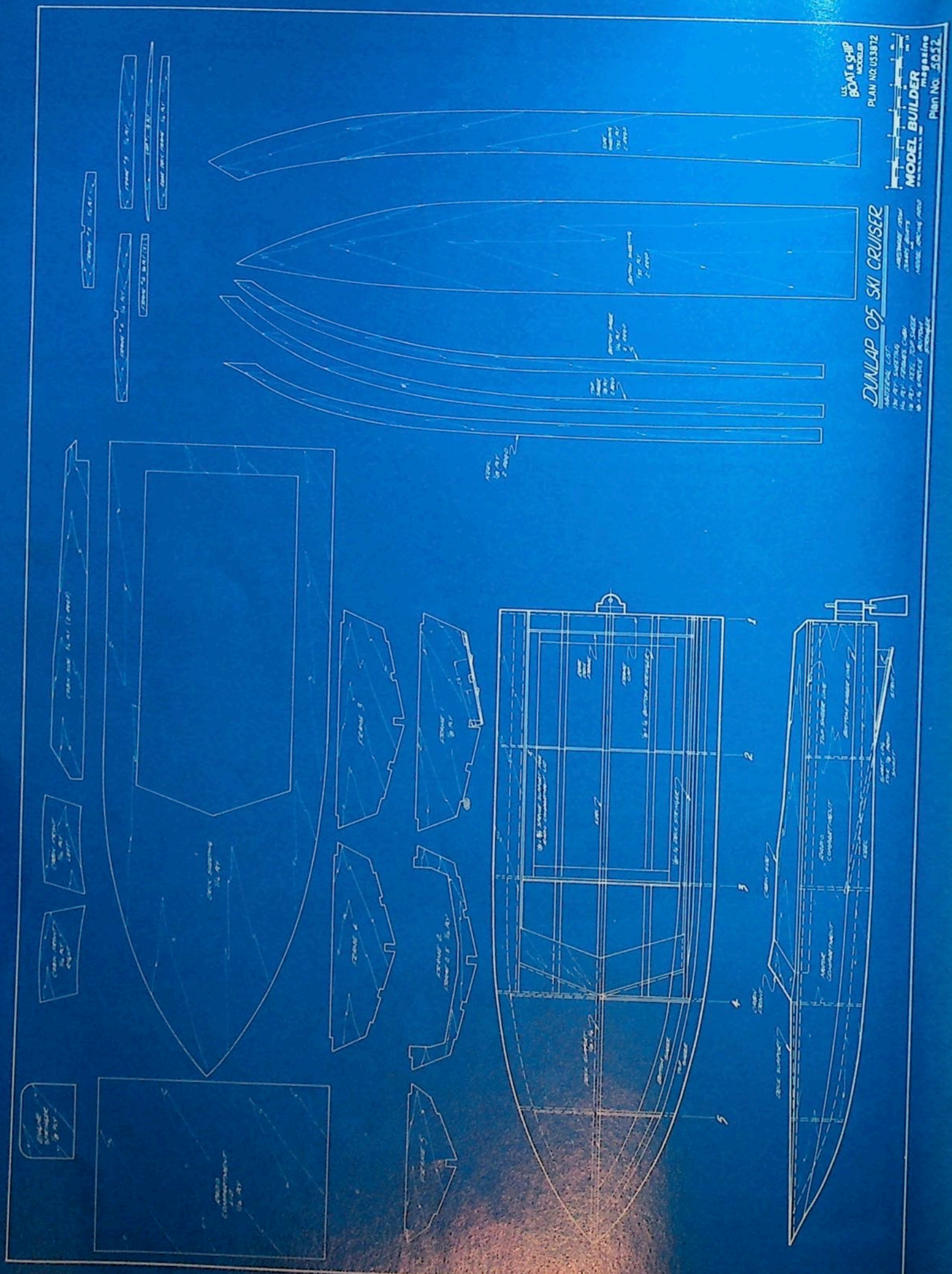
Another area of concern I attempted to solve was mounting the electric motor in the boat. Because electric motors don't have excessive power to overcome poorly aligned motor-to-propshaft installations, a method of allowing for adjustment between motor and propshaft is important. The use of an adjustable engine mount allows for proper alignment.

Before beginning the construction aspects of the 05 Ski Cruiser, I'd like to discuss building materials. I have built two 05 Ski Cruiser hulls. The first boat was constructed entirely from 1/8 and 1/16 balsa and features a simple hatch cover. I've done a considerable amount of running with this balsa hull and, although it works just fine, I'm of the opinion that plywood is a better way to go. This opinion is based on the strength of plywood to resist the rough treatment that model electric race boats will receive. Although the balsa boat has withstood some considerable abuse without actually breaking, it now has a number of dents in the balsa sheeting due to impact with other boats.

The second 05 Ski Cruiser was built using 1/32 plywood for sheeting, 1/16 plywood for most frames, and some 1/8 plywood. The plywood boat is slightly heavier than the balsa version. However, I believe the increased durability of the plywood is preferred to the slight weight saving of the balsawood hull.



Radio compartment, with Astro seven-cell pack, Airtronics Speed Controller, rudder servo, and receiver. Astro Flight 05 Marine motor provides the push.


DUNLAP 05 SKI CRUISER
U.S. BOAT & SHIP MODELER
PLAN NO. US3872
MODEL BUILDER Magazine
Plan No. 5052

BUILDING THE 05 SKI CRUISER

The basic framework of the 05 Ski Cruiser is assembled on a flat building surface. Using a product like Scotch "Spray Mount," tack the top view of the framework plans to the building surface. Apply a coating of tacking spray to the plans, and cover the plans with wax paper or clear plastic food wrap. The framework can now be assembled directly over the plans. Begin framework assembly by tacking the top sheer pieces in position. Using a small right angle, place all the frames on top of the top sheer and glue to the sheer. Once the frames have been glued to the sheer, the keel, bottom stringers, and bottom sheer can be glued in place on the framework. This completes the construction of the framework.

SHEETING THE FRAMEWORK

While the framework is still attached to the building surface, the bottom sheeting is applied. After the bottom sheeting is on the framework, remove the framework from the building surface. Trim the bottom sheeting along the bottom sheer. The framework is now ready for the side sheeting. After the side sheeting has been applied, it will need to be trimmed along the top and bottom sheers.

Before installing the deck braces and deck sheeting, it is a good idea to seal the inside of the hull. A sealing method that both increases the strength of the hull and seals the wood is the use of Hobbypoxy Formula II epoxy glue and a heat gun. Direct the heat gun on the glue as it is brushed on the inside of the hull. The heat will cause the Hobbypoxy Formula II to thin and brush easily. A thin coating is all that is necessary.

The deck bracings can now be added to the top of the hull. Although the boat could be built with a flat deck, I prefer the looks of a slight amount of deck crown. The frame caps for Frame 1 and deck Frames 3 and 4 are attached to the appropriate frames. The lengthwise deck stringers between Frames 1 and 4 are attached next. The rear deck frame is glued to the deck stringers. Using scraps of stringer material, install gluing strips between the deck stringer and the top sheer at Frames 2 and 3. Deck Frame 6 pieces are glued to Frame 4 and the deck stringers. Deck Frame 5 is glued to Frame 5, and the front deck support is glued from the bow to Frame 4. The deck framework is now ready for sheeting.

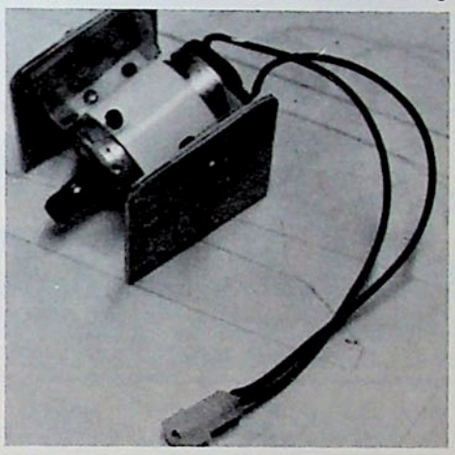
The deck sheeting is installed in one piece. Seal the interior side of the deck sheeting with either clear epoxy paint or Hobbypoxy II. Using epoxy glue will allow more working time when installing the deck sheeting. Clamps and masking tape can be used to hold the deck sheeting against the deck framework. Trim the deck sheeting along the top sheer and deck stringers.

INSTALLING THE MOTOR AND PROPSHAFT

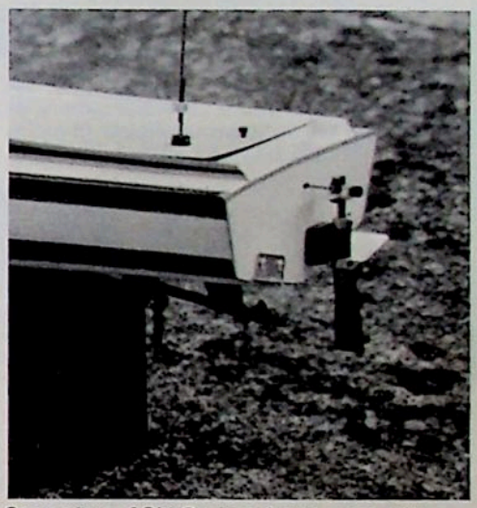
As it is easier to work on the installa-

Continued on page 70

Balsa and ply constructed Ski Cruisers battle it out. Clean and quiet electric power opens up previously unavailable water areas for running model boats.

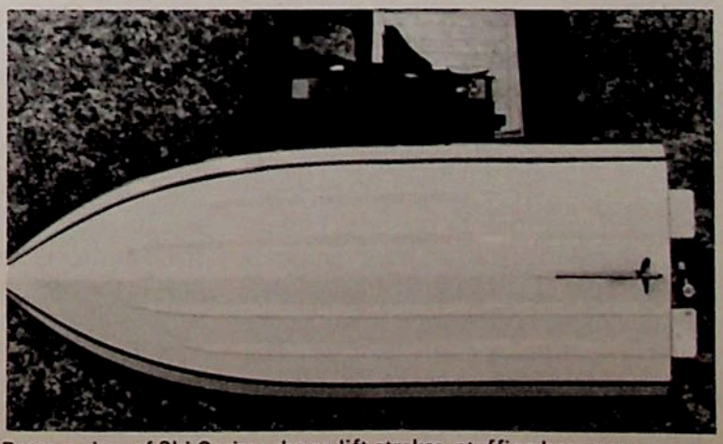


Marine motor in Astro mount on plastic flanges. Allows adjustment between motor and prop shaft.



Stern view of Ski Cruiser shows prop, trim tabs, and rudder assembly.

Wake left by Ski Cruiser tells you it's moving right along. If you have an electric offroad or Formula car, you're ready!



Bottom view of Ski Cruiser shows lift strakes, stuffing box, prop, and ride plates.

The Ace R/C "Digipace", a Ni-Cd battery test instrument without which you shouldn't oughtta be caught! Described in text. Some useful updates on the Digipace can also be found in the May, 1985 issue of Model Builder magazine.

RADIO WAVES

By ELOY MAREZ . . .

Water and electronic equipment! The very best advice I could give you is not to mix the two! But let us face it, boats need water. And radio-controlled boats need electronics! No matter how careful one may be, sooner or later the two will come together. I would like to talk a little bit about what to do when and if that happens.

First, let us discuss a bit what actually happens to electronic equipment in the presence of excessive moisture. Bear in mind that the modern radio control system is actually made up of a lot of electronic building blocks; circuitry designed to do one specific job, all working with and into each other to perform an end function. Moisture on the printed circuit boards will cause high resistance paths, short circuits if you will, between the various components used to make up these building blocks. Some of them will not be adversely affected, and while they may not operate at their designed efficiency, will still continue to operate. Others, like for instance the oscillator circuits in the receiver, the block that keeps it on frequency, will often cease to work completely. . .ergo, a dead receiver. Fortunately for us, most of the R/C system will survive even a prolonged dunking, but some will not. More about that later.

Let us discuss a bit about the proper selection of R/C equipment, with an eye towards the future when the big flood comes. Think of it as insurance. Now, we all know or have read about waterproof servos. *Buy them!* Should your radio box and all of your other precautions fail, the waterproof servo is additional protection that will save you the cost of the major expense in getting a water-damaged system back in operation. You see, you will be able to provide first aid to the rest of the system, as I will be telling you shortly, but there is little that can be done for a water-soaked servo motor, it will have to be replaced. . .at a cost from $10 to $25 each! The motor, the only nonsolid state electronic part of the R/C system, with its brushes, armatures, and bearings or bushings, all with critical clearances, usually does not recover from a soaking, even with the procedures to be explained which will work for the rest of the system. Oh, they will probably run afterwards, and will be okay to continue to use if your R/C boating is limited to a plastic sailboat in the backyard pool. But if you are serious about your boating, if you are running high-speed equipment or in competition of any sort, you cannot afford a single unreliable component anywhere in your control system. A water-soaked servo motor is definitely to be considered as unreliable. Even under the worst situation, a waterproof servo will save you from that.

The next item to be considered are the connectors. . .or more correctly, the pins as used within those little plastic bodies. As in the case of waterproof servos, the precautions here also start back with the selection of your equipment, and the advice here is: '*Go for the gold!*'

Gold-plated connector pins, that is! Gold is resistant to a lot of moisture. . .you probably have some in your mouth. Use it also in your R/C connectors wherever possible. Some of the equipment makers advertise the use of gold-plated connectors, and I recommend that you study the rest of the features of that equipment to see if it fits your needs. Such connectors are easy to spot. . .would you believe they are gold-colored! A second best choice are bright, shinny, silver-colored pins which are plated, quite probably with a nickel alloy. But by all means stay away from any dull silver connectors, they will often create problems even without being water-soaked.

One of the importers of R/C equipment actually uses two types of pins in identical plug bodies, one which is only identified as an "economy" version, and can be further identified by its corroded appearance even when new. This is

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definitely false economy, which can cause you no end of intermittent problems and ultimately damage to or loss of your model.

In general, it has been determined that most R/C equipment failures are caused by: (1) batteries, (2) servo motors, and (3) connectors. We cannot do anything about random failures, but we can reduce the percentage of failure by first choosing the best available type and second by taking proper care of them.

Now, as for what to do when your R/C equipment has turned submarine. Start first with the Sea Scout motto: Be prepared!

Being prepared in this case requires only the addition of a few items to your support equipment: a bottle of alcohol, a small plastic container, and a stiff bristle brush, of the type found in tool stores and called an "acid brush." The industrial grade alcohols, methanol or isopropyl, are best, mainly because they are the least expensive. But if nothing else is available, a quart bottle of drug store alcohol is quite acceptable. The only thing left to tell you is that alcohol absorbs water. . .what needs to be done with water-soaked R/C equipment then becomes obvious.

You'll want to get your water-soaked equipment into the alcohol as soon as possible, since it is the action of oxygen in the air and the moisture that will cause corrosion. Dump everything in, and then disassemble each part as far as you can, so that the alcohol can get into every nook and cranny, since you can bet your last propeller that the water did just that. Naturally, this does not include those waterproof servos, but pay close attention to the connectors, which is where your acid brush comes in. It should be used to clean all exposed parts, bottom of the printed circuit boards, gears, etc. as free of water and corrosion as possible. Then shake as much of the alcohol off as possible, remove whatever more you can with a paper towel, and let things air dry before you reassemble them.

There is one exception to the above. . .in the event your misfortune took place with salt water. Before the alcohol treatment, you will want to rinse everything in fresh water, preferably running water if at all possible. Don't be afraid of causing any damage, as everything that can possibly happen has already taken place.

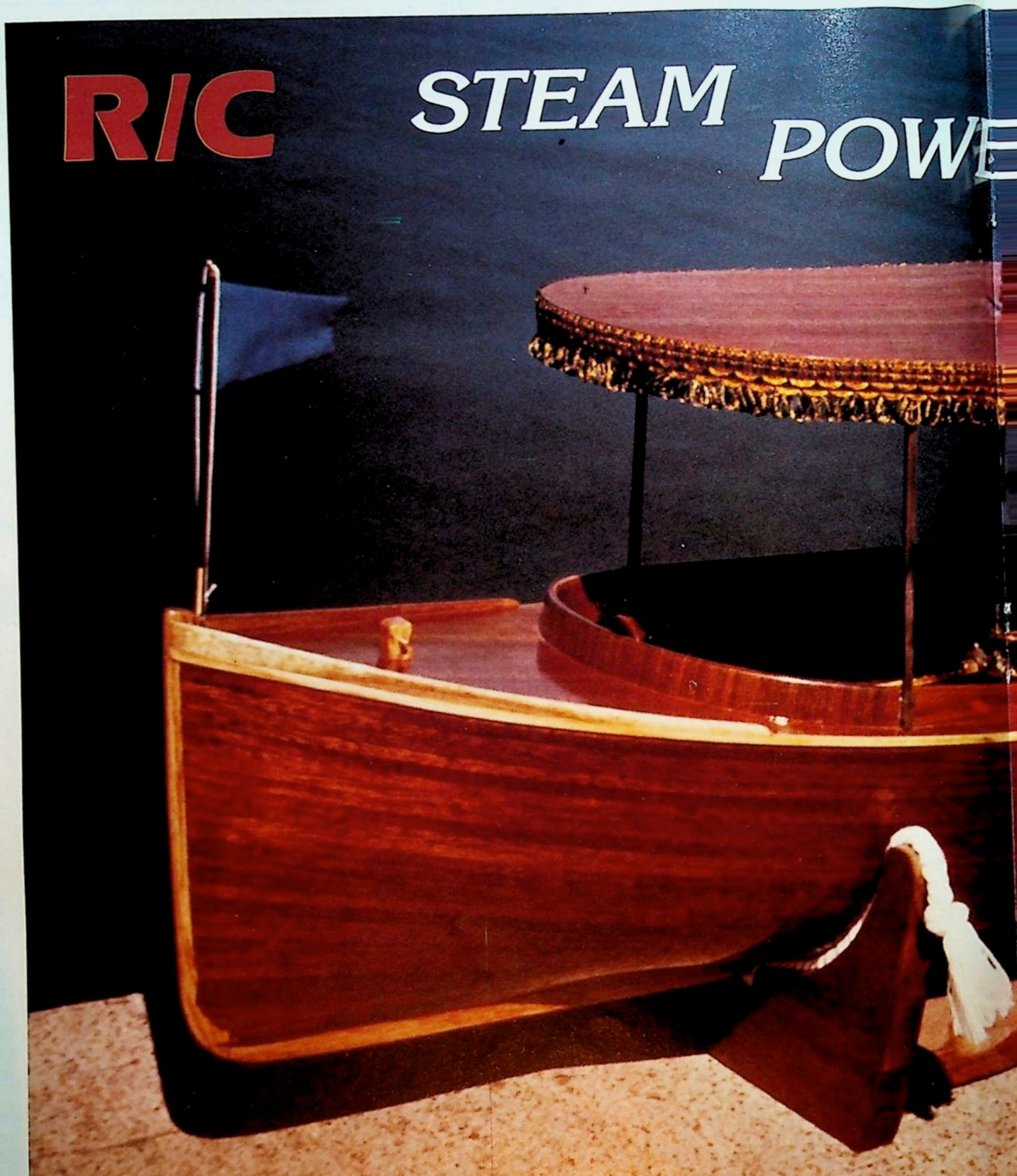
If you should own an ultrasonic cleaner, it will definitely help to run everything through it, in alcohol (with adequate ventilation, please!) when you get home. Again, get as much of the alcohol off as you can, and let the equipment air-dry. Unless your equipment soaked for a long period of time, you will find everything working normally again, and ready for re-installation, hopefully in something that will not let H_2O get to it again.

Ace R/C is probably not the best-known R/C manufacturer in R/C boating, being thought of as being primarily an airplane company. However, R/C is R/C, and since Ace R/C has a great number of products aimed at making life easier for the R/Cer, we feel that it is definitely in your best interest to learn about some of them. As space permits in the next few issues, I will introduce you to as many of these items as possible. Please bear in mind that what we will be talking about is not just another propeller, comparatively speaking, but a very unique propeller, or often the best one around.

First on the list of must introductions is the Ace R/C "Digipace I," a device used to measure the capacity of Ni-Cd batteries. Now, remember what I told you earlier, that Ni-Cds are the primary cause of R/C system failures. No doubt, misuse and abuse will enter into the formula somewhere, but whatever contributing factors might exist, the fact remains that when the Ni-Cds die, so

Continued on page 62

R/C STEAM POWE



Steam launches are thought by many marine historians to be among the most graceful craft to travel the waterways of yesteryear. This particular one is typical of the steam launches of the "Gay Nineties," with its fantail stern, plumb bow, and sweeping sheer, and may evoke memories of the movie "African Queen."

Five channels of R/C are used to control steering, forward/reverse, throttle, whistle, and burner control, but the burner control is not really necessary. The R/C model was scaled to fit the Saint Ives [illegible] ready-to-run steam engines. I chose the twin-cylinder version for its self-starting capability, as it has no dead centers. These engines can be purchased with or without the reverse, but the reverse seems especially fun on an R/C boat. Steam engines obtain reverse by changing the valve timing 180 degrees,

ERED LAUNCH

By KILBURN ADAMS . . . Believe it or not, steam powered model boating is tremendously popular throughout the world. This very typical launch from the "Gay Nineties" era is nothing but class, from stem to stem!

and this makes reversing quick and easy. Steam engines also put out high torque at very low rpm, and can turn large propellers at low rpm. The power and speed of this boat have impressed all who have seen it cruising the local pond.

Since realism was one of the important goals of this project, the various woods were chosen much as they would have been in a full-sized launch. The R/C gear was hidden under the rear seat, but the beautiful engine and its brass accessories are in full view. All equipment and floorboads, with seats, are removable for easy servicing and cleaning, when necessary.

This project is not particularly difficult, but will require dedication to the job. Access to a table saw, jigsaw, and Dremel tool will be required. Many of the brass parts can be made from hobby store tubing and strip stock. Small pulleys, and turnbuckles can be purchased from Proctor Enterprises or model shipbuilding supply companies, such as A. J. Fisher. Other small parts may be found in your spare-parts box. The whistle valve can be made from a tire valve and stem. These parts are brass, and therefore rustproof. Small parts can sometimes be chucked in an electric drill and worked with file and sandpaper, when a lathe is not available. Small brass machine screws can be obtained through model railroad hobby shops. Wood can be ordered from Craftsman, Dept. LX-18, 2729 Mary, Chicago, Illinois 60608. Order their 144-page catalog.

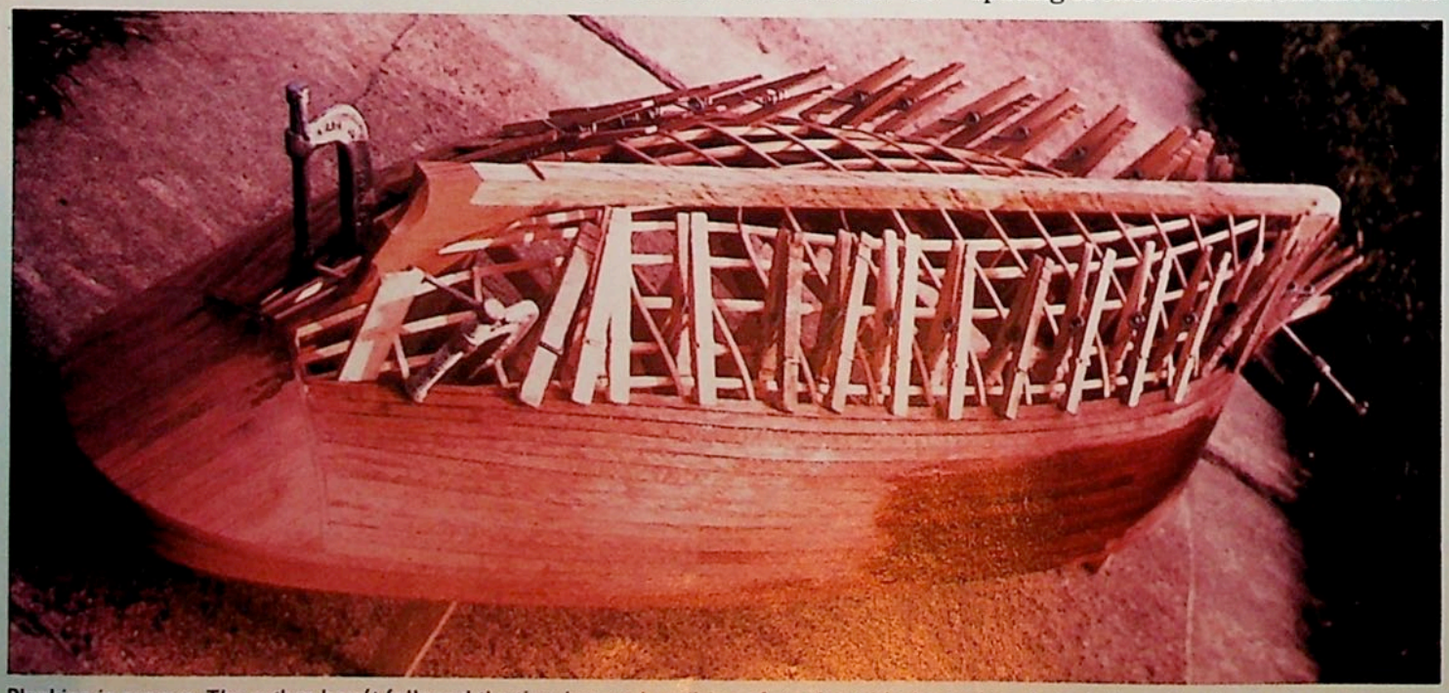
The glues used in construction were mainly epoxies. It is best to have two types available: one for quick set and one which will allow longer wo

You can almost hear the methodic "huff-puff" in this photo of the Steam Launch passing by. Plans show how to make working whistle . . . a must!

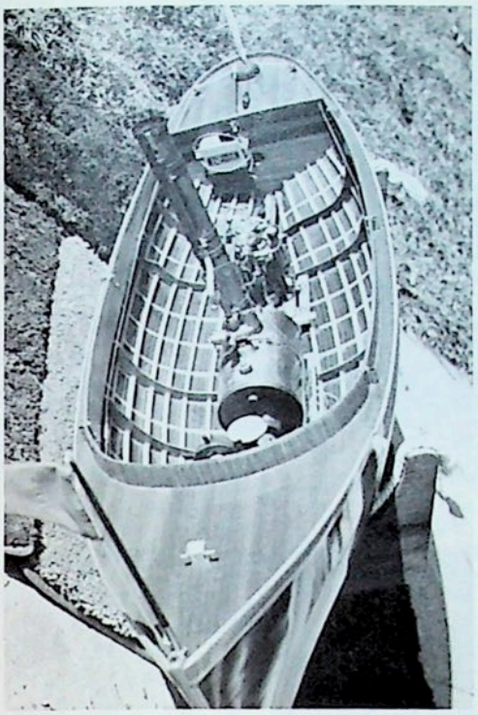
time. Much of the work can be done using something like Sig "Quick-Set" epoxy, which has a working time of five minutes. "Hot Stuff" was used to fasten trim strips along the gunwales and edges of seats, etc. because it does not result in glue oozing out where removal would be difficult.

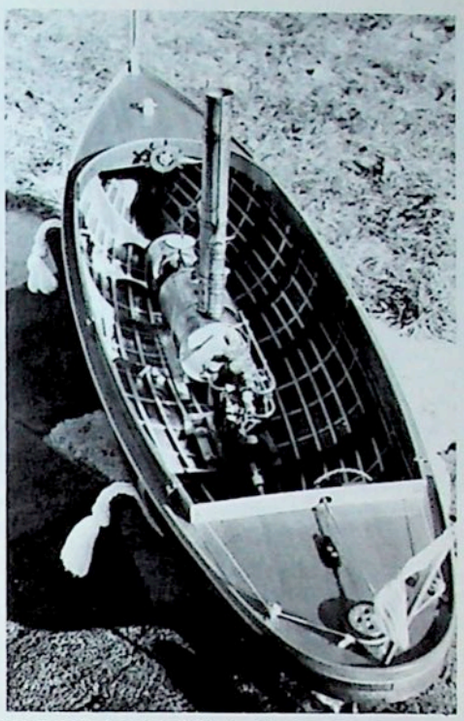
Construction should begin by preparing the frames for mounting to a building board. All frames will have vertical strips of wood attached to aid setup to the building board. The hull will be built upside-down, so cut the vertical strips to hold each frame the correct distance off the board. The building board should be straight and warp-free. Particle board 3/4 x 12 x 60 inches works well. Draw lines 90 degrees to the center line of the board at each station location. Before gluing the frames to the board, assemble the stem, keel, filler piece, and stern post, and attach this assembly on the center line which has been drawn on the board. Glue scrap supports between frames, and between each outer end of the frames and the building board to give proper alignment. Check each frame for proper spacing, vertical alignment, and make sure each is 90 degrees to the center line. Cut out the curved stern formers with a jigsaw, and epoxy to frame No. 10 and the stern post.

Using a perfectly straight piece of 1/8 x 1/8 x 36-inch spruce, check fairness of all frames. Fairness can be checked by laying the strip across the frames fore and aft, and looking for low or high spots in the curve of the strip. If you do this carefully, your eye can detect very small discrepancies in the required shapes of the frames. Any high areas on the frames can be carefully sanded down. Low areas can be build up later. When satified with the fairness of the frames, begin notching the frames to accept 1/8 in. sq. ribbands. Place the ribband closest to the gunwale first. Use the strip previously used for checking fairness to align and and locate the positions of notches for ribbands. Cardboard gauges can be made for locating each notch for the ribbands. The gauge is used to get the spacing of one ribband from another to



Planking in process. The author hasn't followed the time-honored tradition of starting with the garboard plank, but what the heck . . . he got the job done!





Aft and forward views of completed hull, with steam drive installed. Note steering servo, normally hidden by stern seat.

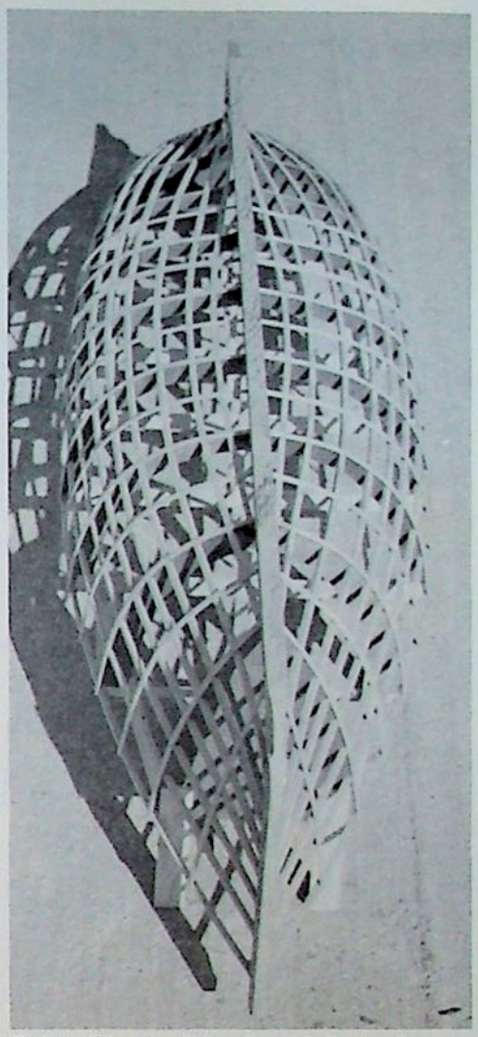
be approximately the same. Dividers could be used in place of gauges.

After all of the ribbands have been glued into place, the 1/8 x 1/16 spruce ribs can be individually boiled in water to make them limber, and then glued over the ribbands. When all ribs have been glued, again check for fairness and sand any highs. Now is the time to fill the lows, by gluing on another rib to any frame that is low. If only a partial buildup is needed, this can be accomplished by sanding down the double rib.

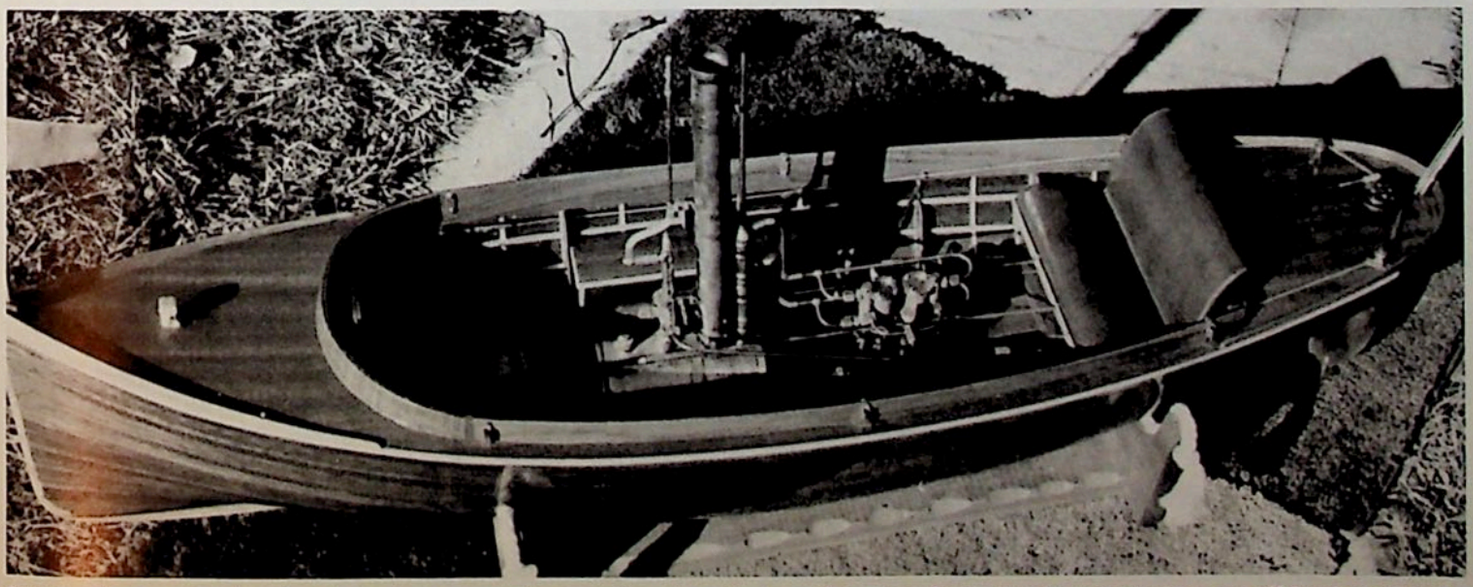
Planking the hull can begin when the hull is fair. Start at the gunwales and work toward the keel. Always, plank in right and left pairs. This will help assure that the hull ends up symmetrical about the centerline.

The first three plank pairs will have to be prepared for bending around the stern. This is done by sawing into the backside of the plank, in the area of major bending. The easiest way to do this is to clamp a strip of wood to the jigsaw table, behind the blade, to control the depth of cut on the planking. The cuts can be spaced about every 1/16 inch, and should be a little deeper than one-half the thickness of the planks. These areas of bending should then be soaked in hot water to make bending easier.

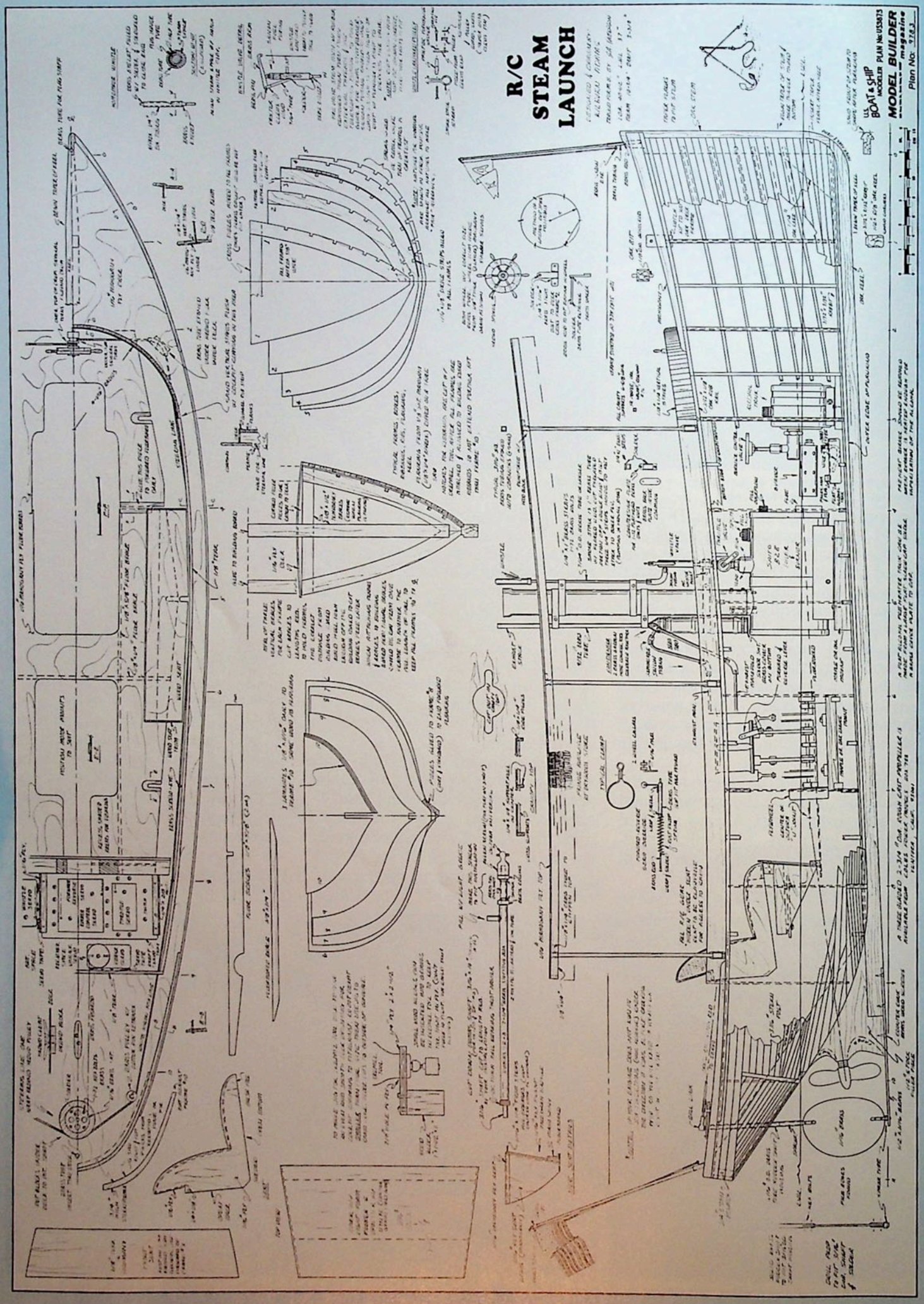
Getting the planks to stay in place while the epoxy is setting can be most easily done using clothespins and "C" clamps to clamp planks to the ribs and ribbands. Some of your clothespins can have wood removed from inside their jaws to allow larger gripping size. Small scraps of wood can be used as wedges between a ribband and plank to hold the plank tight against the preceding plank. It is a good idea not to lay more than one plank per side until the epoxy has set. If planking progresses at only a few planks per day, it seems to take the drudgery out of the job. You can be preparing other parts, building whistles, valves, etc. during the rather long planking period. The



With bulkheads, ribbands, and ribs in place, hull is ready for mahogany planking.



Not exactly a weekend project, but when you receive compliments on the beautiful natural finished mahogany planking, set off by the polished brass steam system, it will all be worth it. Engine shown is obsolete. Check into newest Saito steam power systems, or Cole's Power Models.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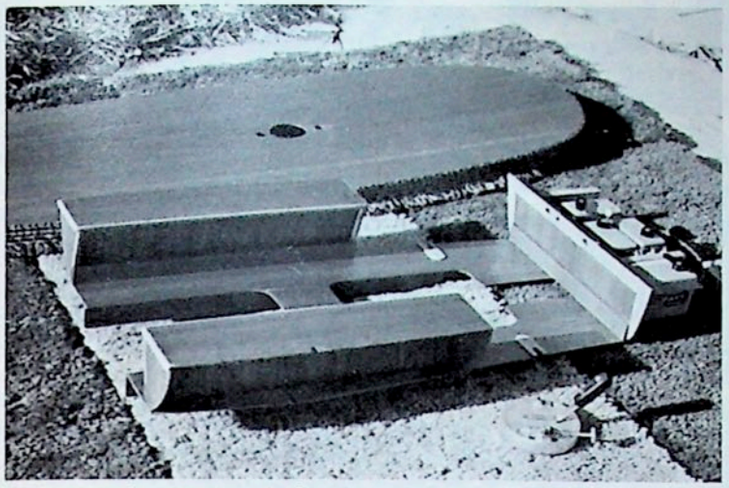
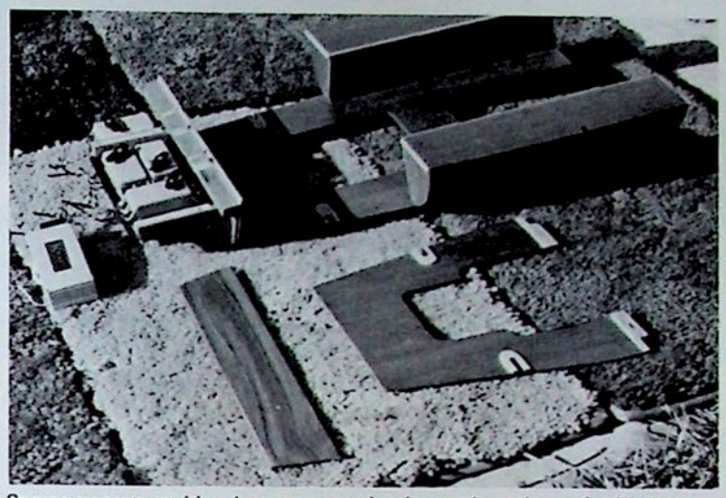
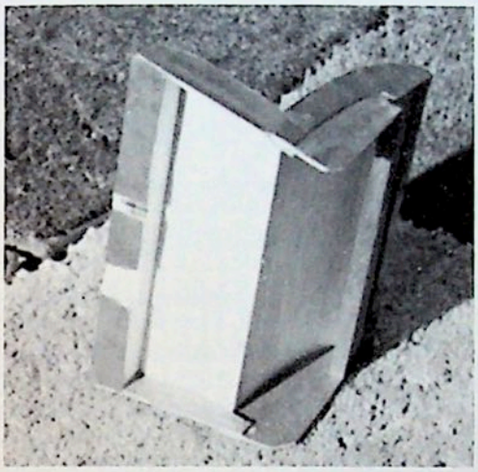


A portion of mahogany ply flooring, with bench/storage seats and servo console. How about that fringed "Surrey" top!



Servos operate rudder, burner, reversing lever, throttle, and whistle. All hidden by rear seat.

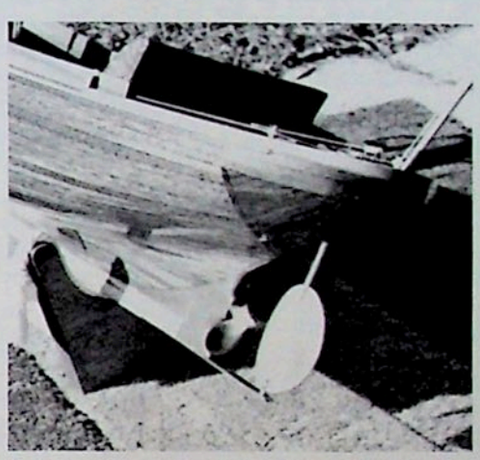


The radio/servo hider! Rear seat is the boat's radio "hatch."

important thing is to lay planks *every day*. Once you get five or six pairs of planks in place, you can begin the smoothing and sealing process described later. You will be surprised at your progress in just a few weeks of laying planks at the rate of just a few a day. A vertical disc or belt sander works well in tapering planks.

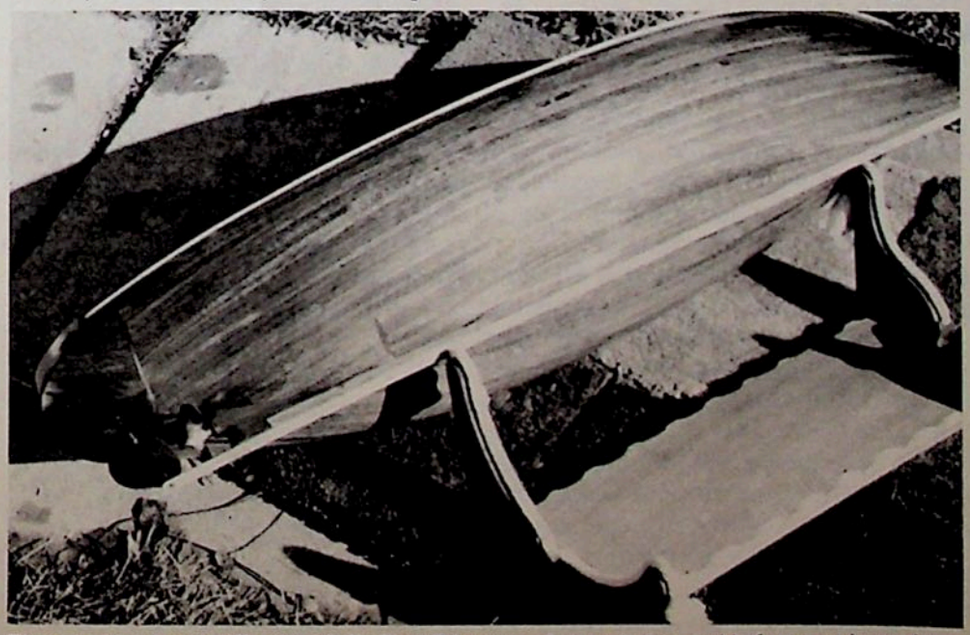
As planking progresses beyond the first three pairs, all planks will stop at the laminated rib over frame No. 10. From this frame aft, you will begin planking with the center plank laid along the stern post and tapering smoothly into the stern planks previously laid. Additional planks in the area from frame No. 8, aft along the turn of the keel toward the propeller shaft to frame No. 10, will require laying planks on edge to build extra thickness, and quite a bit of splicing and fitting will be necessay in this area. This hollow-shaped area will be sanded to shape using a dowel wrapped with sandpaper or emery cloth. Some roughing out can be accomplished with the coarse sanding drum of a Dremel tool.

In order to obtain a natural finish on the hull, and to seal cracks, epoxy should be used as a surface filler on the planking. After rough sanding the planking, epoxy should be rubbed into the wood, and any excess removed by scraping before the epoxy sets up. When the epoxy has hardened, the surface may be scraped again, using a single-edge razor blade, until you have produced a smooth surface. This should be done carefully to avoid scratching the wood with the corners of th blade. It might be a good idea to practice this on some scrap wood before attempting the actual hull. After the hull is scraped smooth, apply more epoxy and scrape off the excess. When hard, scrape again until smooth. Repeat this sequence until the hull is smooth, all cracks are filled and all grain is filled. Wet or dry No. 400 paper can be used to further smooth the hull. Polyurethane varnish can then be applied. Five or more coats, applied with a one-inch "poly brush," gives a nice finish. The foam "poly brush" is inexpensive, reusable, does not leave brush marks, does not shed, and can be purchased in most paint stores and some hardware stores. Try it, you'll like it. All wood parts should be finished with varnish. The inside of the hull should be well sealed with at least three coats, but five or six coats would be even better. I used high-gloss varnish on the exterior of the hull and deck, but used



Typically large prop to handle torque of steam power. Plenty of rudder area.

Continued on page 60



That planking is not difficult...it's "tejious." Lay up a few each day, and before you know it... you're still not finished!

Waterlines . . . . *Continued from page 30*

fact that it is on the deck is purely a coincidence. What is its use? Read on, it's kind of neat!

As hinted in the preceding paragraph, the metacenter M remains, for practical purposes, the same distance from the center of gravity C for less than six degrees of heel. As the angle of heel increases, M starts moving down like a scared cat! As long as M is above G, the design is said to be stable. When M is near G, the design is neutral (and dangerous). When M is below G *you capsize*! If you develop a graph of the distance MB vs. angles of heel approaching 90 degrees and find this distance remains positive, you will have a self-righting model. Many model sail yachts are over-ballasted, far beyond what is required for self-righting. This prevents them from optimum performance by having unnecessary displacement and/or preventing them from reaching their favorable sailing lines (utilizing their sometimes long overhangs). Of course, you may sail your models only on 20-knot winds and have only one suit of sails.

The top drawing in Figure 3 was used because it is handier when determining M for various angles of heel. You may now look at the lower part of that Figure with full approval.

This technique is useful for determining qualitative data on stability, such data useful when boarding a pram with an armful of groceries. Move the 0.2-pound weight on Ol' Flat Bottom out a distance X until we get a prescribed angle of heel, say our eight degrees. The calculation is simple. Where H is the angle of heel, the equation for balance is:

Displacement x Y = weight x X x cos H

7.15 x .15 = .2 x X x .99

1.07 = .198 X

X = 5.4 inches

Since Ol' Flat Bottom has a half-beam of only 2.83 inches, the 0.2-pound weight must be extended 2.57 inches outside the hull! That is why you made the extension!

Now, let's look at Round Bottom, Figure 4. This Figure shows only the heeled position. As the chit-chat is the same as for Ol' Flat Bottom, we shall skip a lot. In this figure you will notice that the metacenter is .27 inches above G, where it was 1.23 inches for Flat Bottom (FB, from now on). Calculating the distance X for the .2-pound weight:

7.15 x .07 = .2 x X x .99

.5 =.198 X

X = 2.53

Comparing this distance with that found for FB, 2.53/5.4 = .47, which says Round Bottom (RB) is considerably less statically stable then FB. Right on! Now, look at the comparison of the distance from the metacenter to the center of gravity for each hull. This is $(MG)_R/(MG)_F$ = .27/1.23 = .22. The square root of .22? It is .47! There is more, as a friend of mine named Sylvestor likes to say!

Let's put a sail on each of these hulls that is of two square feet in area. With FB at dockside and our sail trimmed right so that the sail only produces flat plate drag, a wind of velocity V ft./sec. will produce a heeling force F and a heeling moment (due to the height of the sail centroid above our reference waterline center). This moment shall be equal to that previously determined by the .2-pound weight. The formula for this "wind" moment is:

Moment = .5 x air density x Area x V^2 x drag coefficient x centroid height

Substituting into this equation, using .00238 slugs/ft.^{3}, 2 ft.^{2}, 1.0 and the sail foot mounted a distance over the hull such that the centroid height is 1.42 feet:

Moment = .00334 V^2

The heeling moment of FB was found to be .2 x 5.4/12 = .09 pound feet. Equating this to the "wind" moment and solving for wind velocity V:

.00334 V^2 = .09

V = 5.19 feet per second

This same calculation for RB provides:

.00334 V^2 = .042

V = 3.55 feet per second.

Let's compare the wind velocity to produce the eight-degree heel to that of FB. This is 3.55/5.14 = .684. Let's try something with the metacenters. We have already demonstrated that the comparison of the ratios of metacenter heights was .22. The 1/4 root of this ratio is .685! How about that?

What does the foregoing tell us?

1) For any hull, the static stability is proportional to the square root of the metacentric height. A 1/4-size model will have 1/4 the metacentric height and will have 1/2 the stability. This means the movement athwartship of a given weight will have twice the heeling effect.

2) For any sailing hull, the sail-carrying ability for a given wind velocity is proportional to the fourth root of the metacentric height. A 1/4-scale model will have 1/4 the metacentric height and in a beam wind of velocity V will display the same heel as the full-scale hull would in a wind of velocity $(4)^{1/4}V$, or 1.414V. This tells us that at dockside (remember we are talking static stability) a two-foot model in a 1.4-knot wind will heel the same as an eight-foot model in a four-knot wind, providing the small one is to exact scale in *all* respects.

The 24-foot hull's displacement would be 7.15 pounds x 12^3 = 12,355 pounds for either FB or RB. See why it would be a poor performer? Let the vessels be ballasted so that the center of gravity is in the same place as in the model. The sail area will be 2 x 12^2 = 288 ft.^{2}. Truly a small sail area for this displacement. Now we come to different parameters for FB and RB. Let's look at FB. Its metacentric height was 1.23 inches. Full scale would be 12 x 1.23 = 14.76 inches. The ratio of the full-scale metacenter to the model would, of course, be 12, the reciprocal of the scale. Remember the relationship of the wind required to heel the model eight degrees and the square root of the ratio of the metacenters of RB to FB? It holds here, too. The ratio for the full-scale to the model is 12, and the square root of 12 = 3.46. Therefore, the wind required to heel the full-scale FB eight degrees would be 3.46 x 5.19 = 20 ft./sec. For the full-scale RB a wind of 3.46 x 3.55 = 14.2 ft./sec. would be required. This is an example of the effects of similitude and shape of hull sections on static stability. If the hulls had been conventional with varying cross-section, the stability would have less and more marked between the FB and RB, but the manner of explanation would have been vastly more complicated.

I think this discussion, if nothing else, will explain why nice-sailing small-size sailing models have deeper keels, wider beams, and/or smaller sails than full-sized sailboats. We, of course, hope it has done more!

In a future "Waterlines & Currents," this matter of transverse stability will be brought up again, for the issue will be a real-life model hull. The constant section models used here do not change in pitch trim with heel, as do designs with a nonsymmetrical displacement curve, where the immersed section areas change with heel, causing the bow to rise or sink with an increase of heel. Analysis of this kind of problem, though based on the principles discussed here, requires yet another method for solution, so remember this issue. Also, remember the method described for determining the centroid of a plane figure. Try it on a circle, a rectangle (you already know the centroids of these figures. . . see how close you get!) or a big ink blot. It is a neat trick for a lot of things.

May you have fair winds and a clear star to steer by. •

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AIRCRAFT CARRIER *"SCORPIO"*

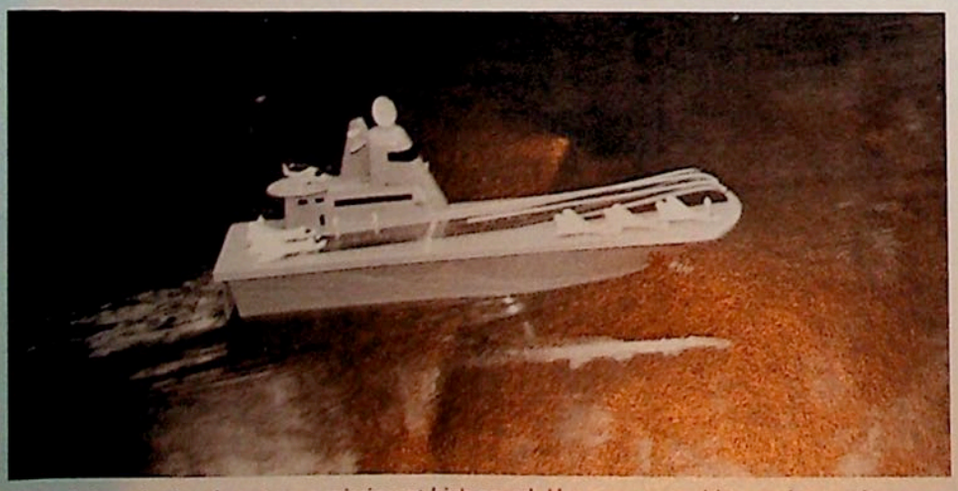
By GRAHAM GOODCHILD . . . Here's an interesting concept for a mini-aircraft carrier. Like a PT boat, "Scorpio" gets to its target fast, but instead of torpedoes, it launches aircraft . . and recovers them too!

Scorpio by name and Scorpio by nature. Secretive, yet has not one, but two, stings in her tail.

This just about sums up this semi-scale, freelance design aircraft carrier. The stings come in the form of two remotely released, catapult-launched aircraft retrieved by operating a stern-mounted scoop. . . plus motorized helicopter blades and radar, together with the normal steering and speed control functions.

Construction is straightforward, using sheet balsa for the hull, deck, and superstructure. The aircraft trigger release mechanism is made from alloy tube, piano wire, and plastic card, all of which are easily fabricated. The trigger also operates the recovery scoop, which is formed from piano wire and aluminum mesh.

The plans should be self-explanatory; however, it is advisable to also study the construction sequence and operating notes before proceeding.

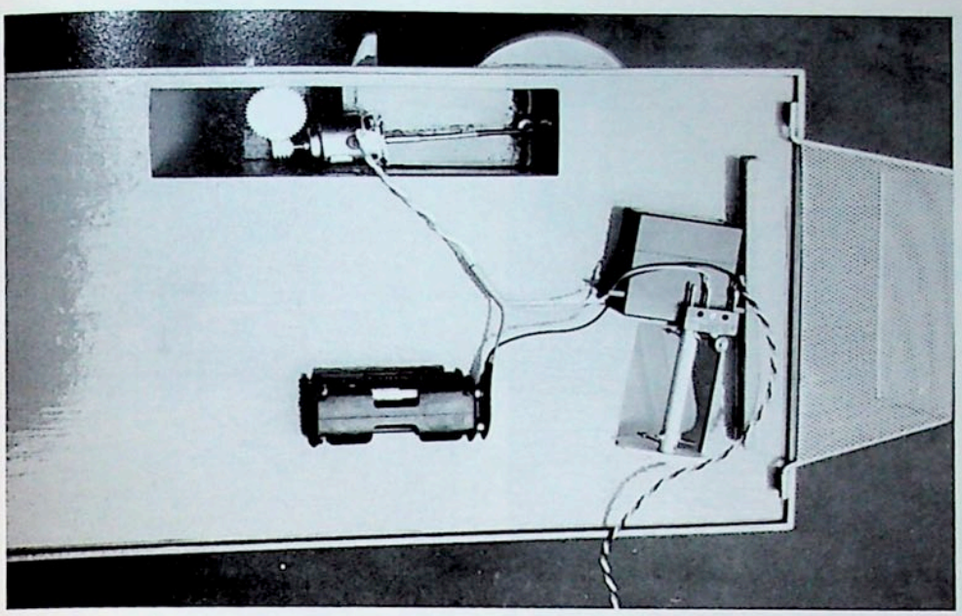


The mini-carrier heads out on a mission at high speed. Hmmm . . . could be an interesting concept if we could perfect vertical landing jets such as the "Harrier."

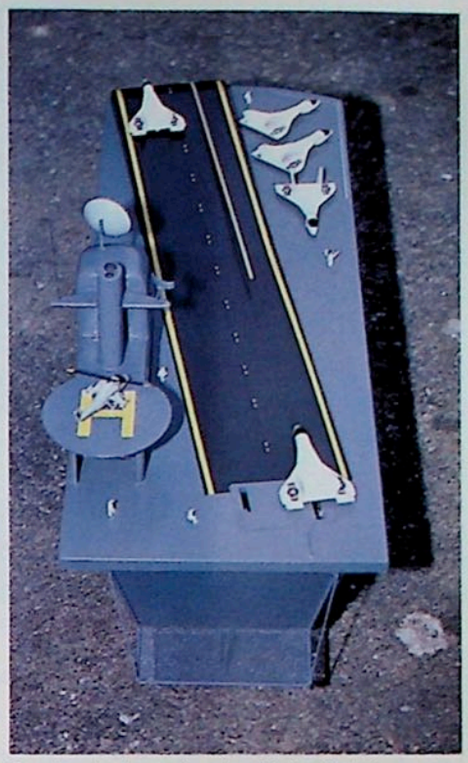
MATERIALS

Hull, Superstructure, Aircraft, and Helicopter:
1 sheet 4 x 36 x 1/4 in. balsa.
3 sheets 4 x 36 x 3/16 in. balsa.
2 sheets 4 x 36 x 1/8 in. balsa.
1 sheet 3 x 36 x 3/32 in. balsa.
Scrap 1/32 in. balsa and brass tube.

Aircraft Trigger Mechanism, Scoop and Motorized Helicopter/Radar:
7mm o/d Alloy Tube.
1 length 14-gauge piano wire.
1 length 20-gauge piano wire.
1 length 14-gauge I.D. plastic tube.
1.5mm and 0.25mm plastic card and rod.
Small 1-1/2-volt motor with matching worm gear and 2cm cog. Spring coupling, Micro Switch.
AA-size, 1-1/2-volt battery holder.
Thin wire, nylon line, self-tap screws and aluminum mesh, etc.
6-volt propulsion motor.
9-1/2-in. propeller shaft with 1-1/4 in. 3-bladed propeller.
Rudder assembly.
1/2 kg. ballast.
3-function radio control: 1 servo—



Underside of flight deck showing launch release mechanism and driving power for radar screen and helicopter main rotor. Aircraft recovery scoop at far right.



Overhead photo showing flight deck layout and color markings. One aircraft is posed in takeoff launch position.

steering, 1 servo—forward/reverse speed control with control board, 1 servo—aircraft trigger mechanism and scoop.

Two anchors and N gauge railway figures for crew.

CONSTRUCTION SEQUENCE

1. Trace and cut out from 3/16-inch sheet balsa parts "A" through "F." Cement together both halves of part "E" over the plan and hold with pins until set. (*Unless you use Cyano glue! wcn*)

2. Cement the two parts "F" to each side of part "E" where shown over the plan, holding with pins until set. Note that the cutout for the aircraft trigger release arm is on the starboard side with the model the right way up.

3. With the hull outline still over the plan, cement frame "B" inverted where shown, followed by frame "C" and stem "D," checking that they are square and upright. The slots in frame "C" will require bevelling before fitting and also the transom "A," which is cemented at the angle shown.

4. Lift assembly from the plan; bevel the bottom of the transom, and, if necessary, trim the remaining frames to enable the bottom of the hull to fit.

5. Trace and cut out the hull bottom from 1/4-inch sheet balsa and cement to the transom, frames, and stem.

6. Fair in the frame sides, including the top and hull bottom, and bevel the stem for sheeting the hull sides. Sheet with 1/8-inch balsa, starting at the bow with two, 4-inch wide sheets on each side, with the grain running diagonally, and hold with pins until set. The remainder of the hull is sheeted with lengthwise sheet balsa.

7. Cut seam battens from 1/8-inch sheet balsa and glue inside the hull where the lengthwise sheeting joins the diagonal sheeting. Trim edges, fair in stern, and smooth round the hull bottom at the corners.

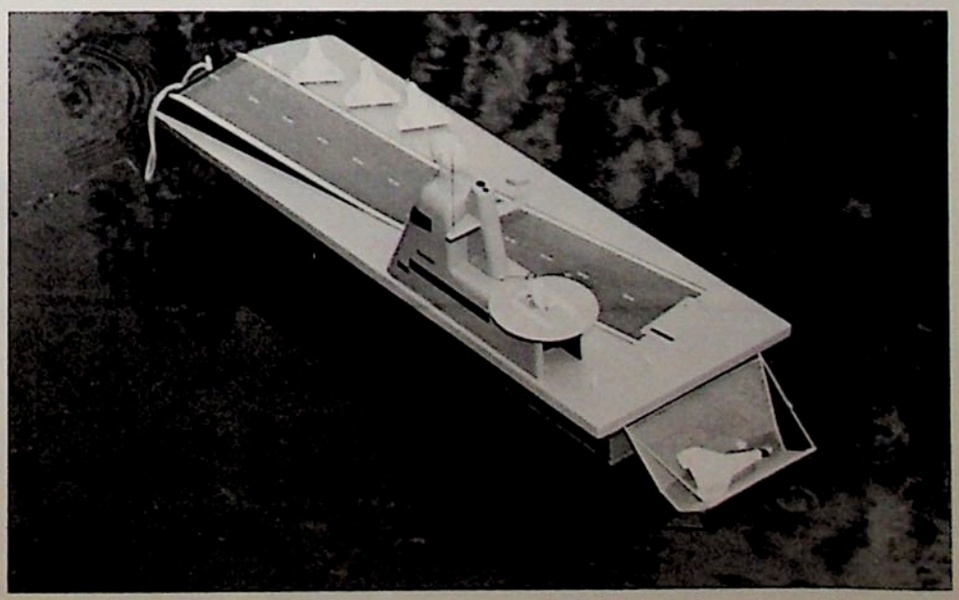
8. Measure, trace, and cut out from 3/16-inch sheet balsa the two halves of the flight deck and cement together on a flat surface, holding down with weights until set. Cut the deck retaining strips from 1/4-inch sheet balsa and temporarily hold against the inside of the transom and frame "C" where shown. Mark on the underside of the flight deck the hull position, and cement to the retaining strips. When set, the deck with retaining strips can be removed.

9. Bevel the front of the flight deck, and cement 3/32 strip balsa around all sides. The carved strip on the front is first cut to shape from scrap 3/32 sheet, notched to facilitate bending, and cemented.

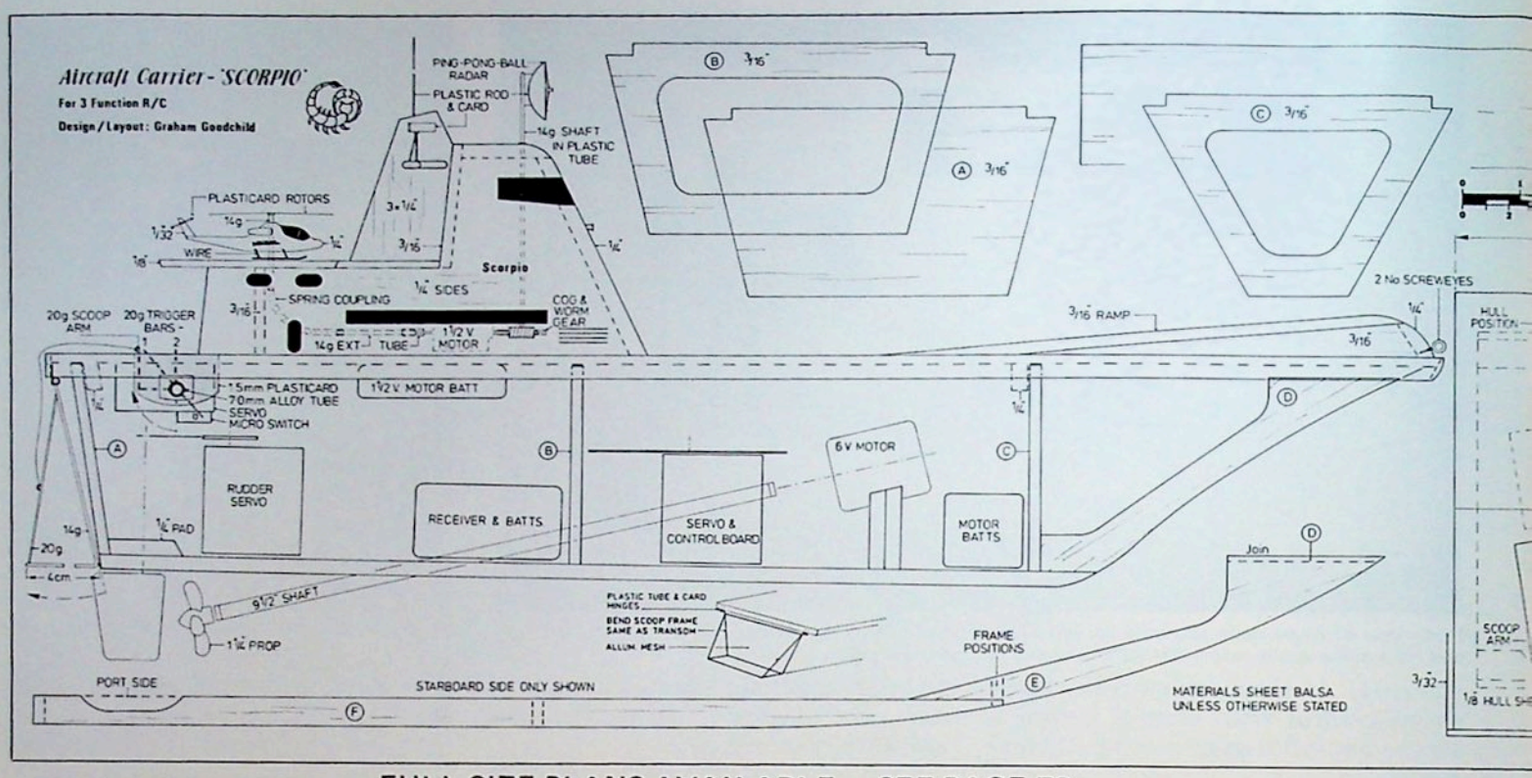
10. Mark the position of the takeoff ramp on the flight deck; cut out the ramp sides from 3/16-inch sheet; the front from 1/4-inch sheet, bevelled and cemented in place. Cut out the ramp top from 3/16-inch sheet, feather in the rear edge and cement in place. Smooth round the forward end.

11. Trace and cut out the superstructure sides from 3/16-inch sheet, helicopter pad from 1/8-inch sheet, bridge back from 3/16-inch sheet, and bridge top and front from 1/4-inch sheet. Cement together and round off bridge to the profile shown.

12. Trace and cut the funnel from three layers of 1/4-inch sheet. Cement together, round off sides, drill out the top, and cement in place. Trace and cut out the crosstrees from 1/8-inch sheet,



"Scorpio" in the process of recovering one of its aricraft. If full-scale jet craft could be made floatable, the concept would not require aircraft with vertical landing capability.



FULL SIZE PLANS AVAILABLE — SEE PAGE 78

round off corners, and cement to each side of the funnel.

13. Mark the position of the superstructure on the flight deck where shown and cut out the section of deck inside for access. Cement superstructure to the deck.

14. Mark the position of the propeller tube and epoxy through a pre-drilled hole in the hull bottom and frame "B." Glue the rudder tube mounting pad; cut from 1/4-inch sheet, where shown, and drill out. Fasten the rudder assembly after the painting is completed.

15. Cut the motor mount from two pieces of 1/4-inch sheet cemented together. The height and shape will depend upon the size of motor used. Cement the mounting to the hull bottom with the motor temporarily in place to check correct alignment with the propeller shaft.

16. Trace from the plan the aircraft trigger release opening in the flight deck and cut out.

FINISHING

Smooth down all external surfaces and seal with four coats of sanding sealer; two on the inside, rubbing down between each coat. Finish with two coats of grey enamel. Mask off with tape the ramp and window details on the superstructure, and paint black. Paint yellow the "H" on the helicopter pad and the boundary lines on the flight deck after first also masking with tape. Finally apply a coat of semi-matt clear varnish to all exterior surfaces.

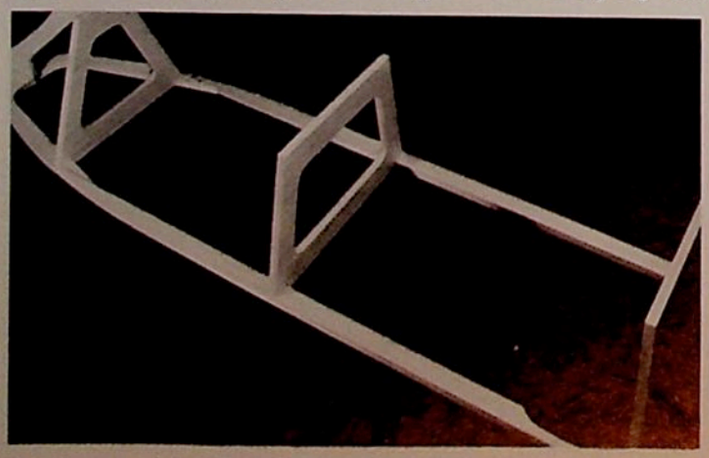
FITTING OUT

Install the rudder assembly together with the motor and couple up to the propeller shaft. Plastic tubing was used for the coupling on the prototype model.

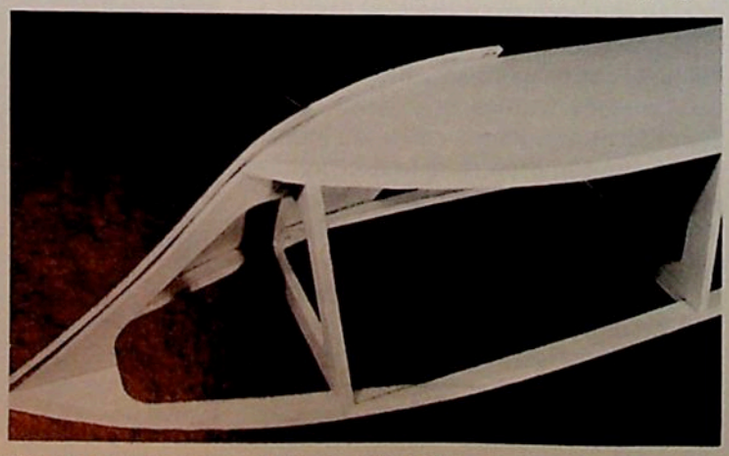
Measure from the plan and cut to length from 14g piano wire and brass tubing the radar and helicopter rotor shafts. Epoxy the tubing through pre-drilled holes in the bridge top and helicopter pad. Any small 1-1/2-volt suppressed motor is suitable to drive the radar and helicopter rotor that has sufficient lengths of shaft at both ends. Push on a plastic worm gear on the front end, and extend the rear end of the shaft with a short length of 14g piano wire, joined and glued with brass tubing. Push on a 2cm diameter cog to one end of the radar drive shaft, insert through the tube, and retain with a small washer soldered to the shaft. Connect the helicopter drive shaft to the rear end of the motor with a tightfitting spring, and epoxy the motor to the inside of the superstructure.

AIRCRAFT TRIGGER MECHANISM

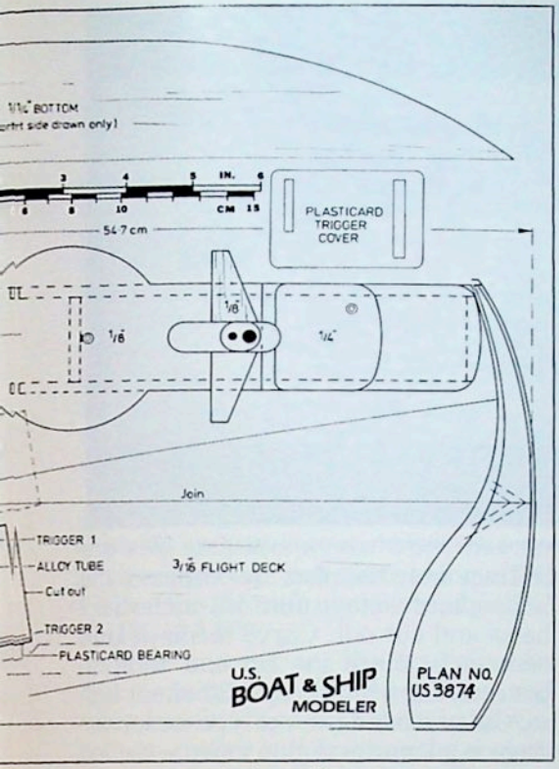
Cut the 7mm o/d alloy trigger arm tube to length and ream out one end to fit over the servo output shaft. The diameter of the tube may have to be different as specified depending upon

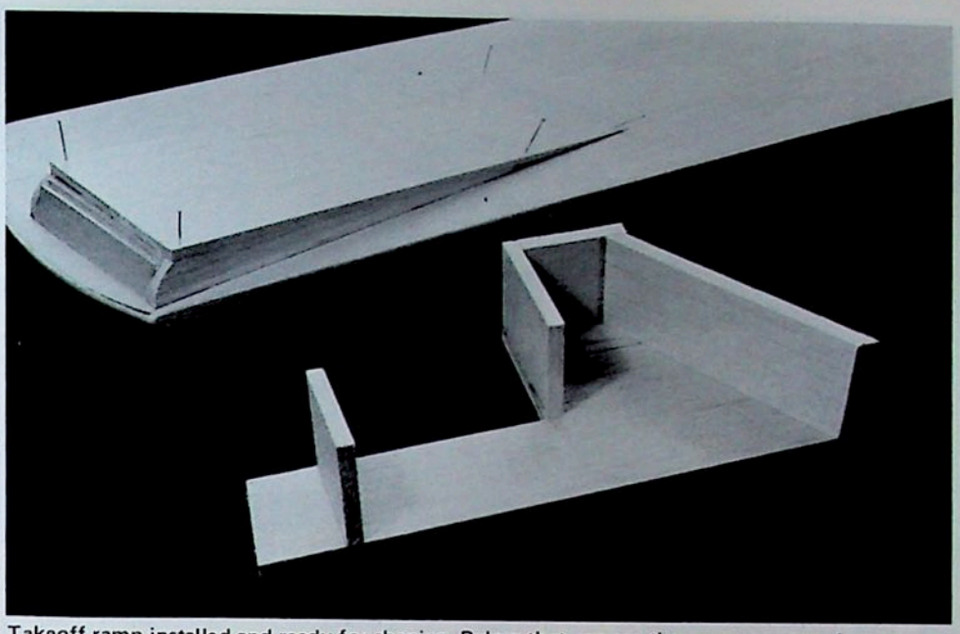


Basic framework is extremely simple, but gets the builder off to an uncomplicated start in construction.



With bottom glued on and side sheeting begun, the construction still indicates basic, simple building concepts.





Takeoff ramp installed and ready for shaping. Below that, we see the superstructure in process of completion.

the type and size of servo used.

Mount the servo in the position shown on the underside of the flight deck using small amounts of contact glue at each corner. Trace and cut the bearing plate from 1.5mm plastic card and a doubler piece cut from similar thickness plastic card, and give to the outward face of the bearing. Drill out for the trigger arm tube so that it is a snug fit, and fasten the plate with contact glue to the outward edge of the trigger opening in the flight deck.

Cut to length the two trigger bars from 20g piano wire, noting that the one nearest the servo is longer, to make contact with the micro switch for turning on the radar and helicopter motor.

Drill holes for the bars where shown in the alloy tube, and insert the tube through the bearing plate and fasten to the servo output shaft with a self-tap screw through a pre-drilled hole in a position so that the outward trigger bar is vertical when the servo is at the limit of its travel when in operation, and the inner trigger bar facing backwards at about 20 degrees.

Fasten the trigger bars in the tube with blobs of solder on each side. The tips of the bars should protrude 3mm above the surface of the flight deck. Solder small washers to the bars at a point flush with the deck to prevent the aircraft attachment tubes from slipping down.

Fasten a micro switch in a suitable position on the underside of the servo so that it makes contact with the bottom of the extended inward trigger bar for turning on the radar and helicopter motor. Servo tape a suitable battery holder to the underside of the flight deck and wire to the micro switch and motor.

RADIO INSTALLATION

Fasten the rudder servo to the hull bottom in the position shown with servo tape and link up to the tiller arm. Also, tape in the speed control servo and resistance board, and wire up to the motor.

The receiver, switch, and motor batteries are held in position with double-stick foam tape to enable them to be easily moved to trim the model in the water.

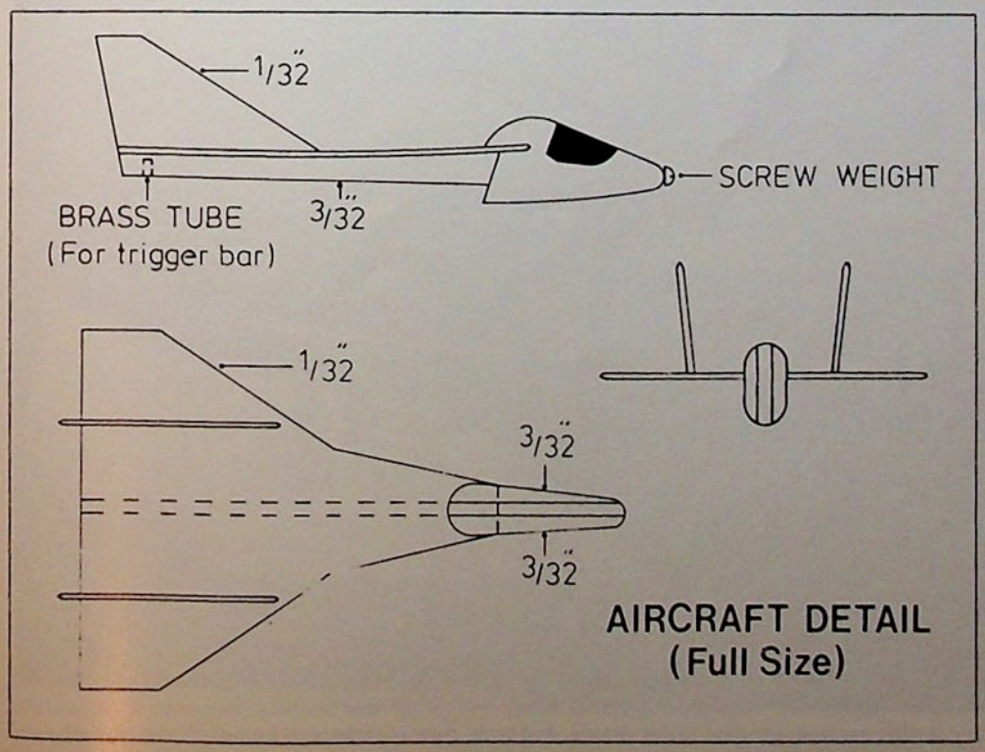
About 1/2kg of ballast will be required to stabilize the model and bring it down to the correct water line. Lead fishing weights are suitable for this, and are positioned with the model in the water and held with servo tape.

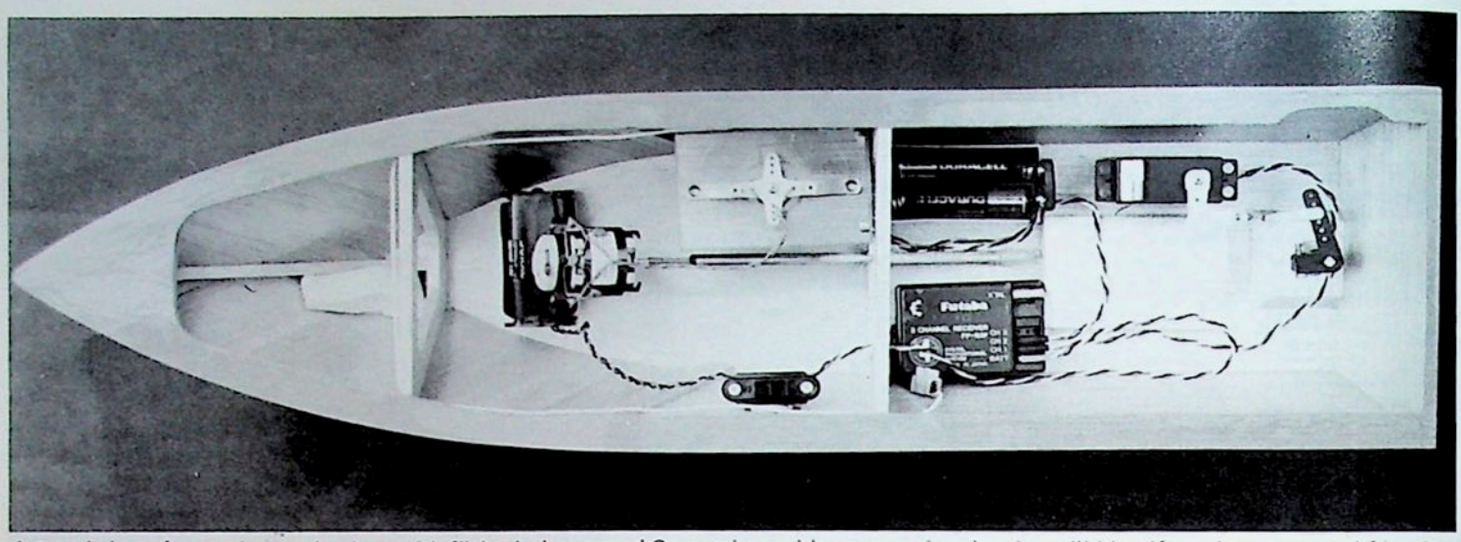
The aerial wire is threaded through punched holes in the top of the frames. Check the model at this stage in the water to test all functions before proceeding further.

AIRCRAFT RETRIEVING SCOOP

Bend the scoop frame from 14g piano wire as shown, and solder a wire bracing, cut from 20g piano wire, to each side of the frame. Cut out and fasten aluminum mesh to the frame with loops of thin fuse wire and super glue. Construct the hinges from tubing with plastic card packing, and glue to the underside of the rear of the flight deck with the scoop in place. Check that the scoop pivots freely and it rests against the transom when not in operation.

Cut and bend the scoop operating arm from 20g piano wire, and fasten with solder through a pre-drilled hole in





Internal view of operating mechanisms with flight deck removed. Comparison with construction drawing will identify various parts and functions.

the alloy trigger arm, as shown. Solder an attachment eye to the end, cut from thin wire, for linking to the starboard scoop bracing with nylon fishing line. An attachment eye is also soldered at a point midway along the bracing.

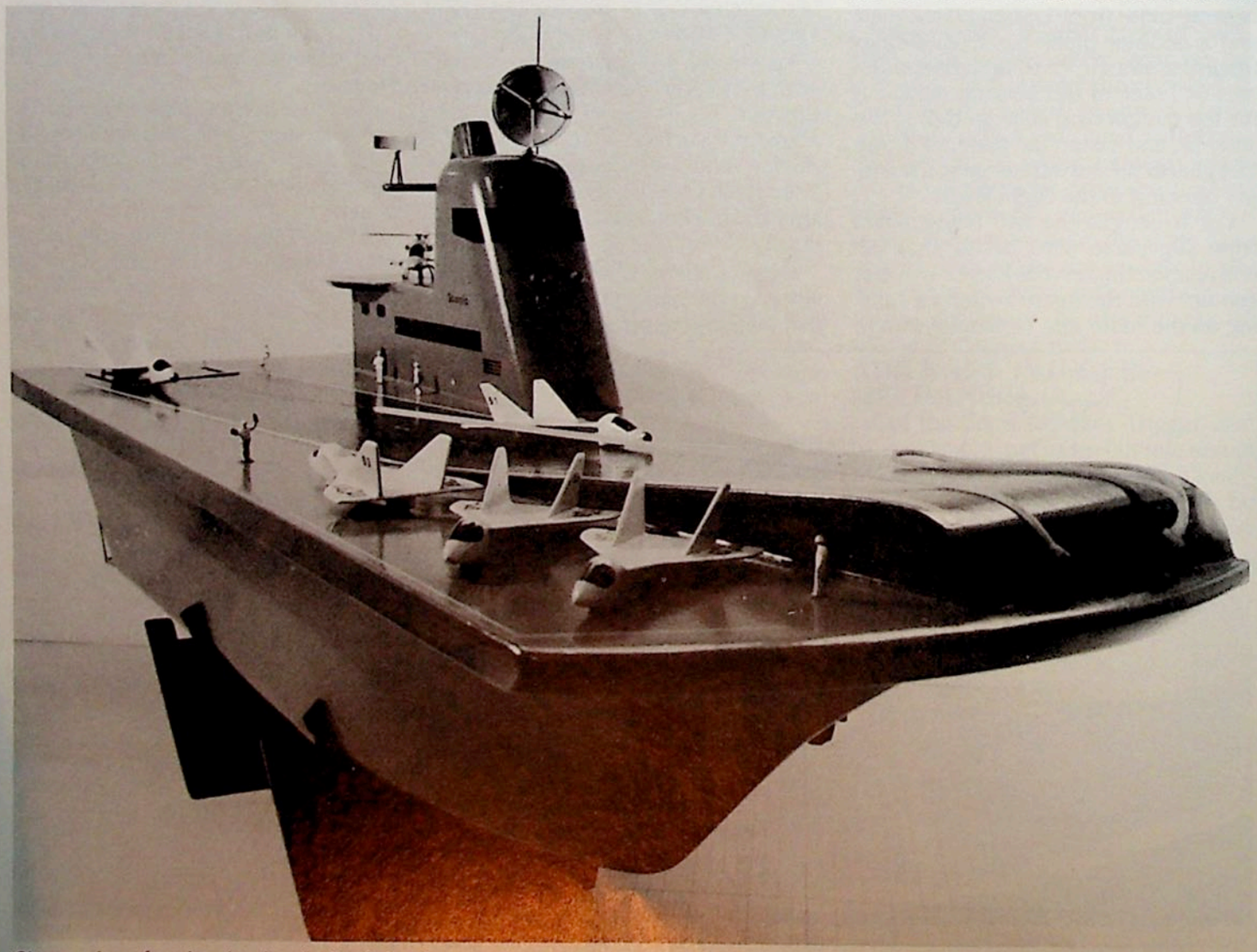
In operating, the scoop is raised to its maximum when it is parallel with the flight deck. At this point, the trigger arm is at its maximum forward position, with the aircraft trigger bars retracted, and are about parallel with the flight deck. This function should now be checked under radio, and any adjustments that are necessary can be made by altering the length of line or bending the operating arm.

Trace and cut out the trigger access cover from thin plastic card as shown. This is painted grey, as well as the scoop, and the cover is held in position with double-stick tape for easy access, if necessary.

HELICOPTER AND RADAR

Trace from the plan the outline of the helicopter fuselage onto 1/4-inch sheet balsa and cut out. Carve to shape and cement in place the fin and weapon bearers, cut from scrap 3/32 sheet balsa. Cut and bend the ski-type undercarriage from wire and glue into pre-drilled holes in the fuselage side.

Solder the ski rail to the legs. Carve the jets from scrap balsa, and cement to each side of the fuselage. Drill the hole for the motor shaft, which should be



Closeup view of carrier, showing details of aircraft, catapult method, conning tower details, and scale crew members to complete the scene.

slightly larger in diameter than the shaft itself.

Paint the helicopter light grey after appropriately sealing. Add the rockets and tail rotor, made from scrap plastic rod and card, and paint, including the cockpit, which is picked out in black after first masking with tape. Glue the helicopter to the pad and over the rotor shaft. Cut the rotor from plastic card; paint and glue to the top of the shaft.

The radar dish is made by cutting a section from a ping-pong ball and gluing to the shaft via a piece of plastic card packing. Plastic rod is used for constructing the internal bracing and receiver pod, and suitably painted.

Both the helicopter rotor and radar functions can now be checked under radio and should operate when the aircraft trigger bar just starts to move and before the aircraft are released.

AIRCRAFT

Trace and cut out the fuselages for five aircraft from 3/32 sheet balsa, and wing and fins from 1/32 sheet balsa. Cement together and build up the cockpit with an additional layer of 3/32 sheet cemented to each side of the fuselage. Smooth round the edges of the wings and fins, including the cockpit areas.

Epoxy a small brass tube into the rear of the fuselages through pre-drilled holes for the trigger bars to locate into for launching. (It is only necessary to equip two aircraft for flight, the rest can either be for show or they can also be made to fly in case of loss.)

As it is probable the aircraft will land in water, it is necessary to seal them well with sanding sealer prior to painting. Cockpits are picked out with black enamel and marking protected with clear varnish. The correct balance is achieved by inserting a small screw in the nose. Further trim can be obtained by gluing small elevators made from thin plastic card to the trailing edges of the wings.

DECK FITTINGS

Insert two small screw eyes in the front of the flight ramp for attaching the elastic band aircraft catapults. Attach two 10cm elastic bands with an additional 15cm length of fine nylon fishing line tied to each band with a loop on the ends for attaching to the aircraft.

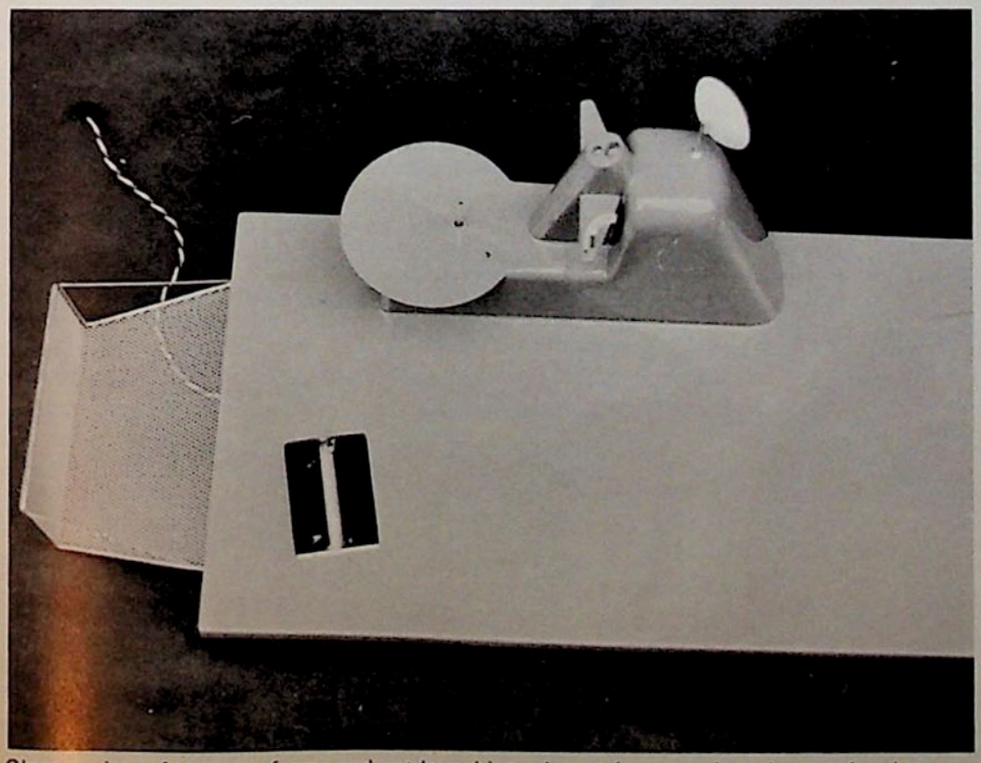
Construct the short range radar and aerial from scrap plastic card, and rod and glue to the crosstrees. Glue the anchors to the bow (these are commercial fittings). Finally add the crew, which are "N" gauge railway figures, suitably painted and glued to the deck.

OPERATION

Any final trimming of the model in the water can be made by moving the batteries. In operation, the two main steering and speed/reverse control functions are executed with the transmitter sticks in the normal way. The third function is best operated by a separate lever on the transmitter which is not spring-loaded to enable the aircraft trigger mechanism to be set in any required position.

Locate the two aircraft on the trigger bars, attached to each catapult, with the receiver and transmitter switched on. The aircraft are now primed and the model can be launched. Proceed in the normal way by at first using just the two main functions until you are familiar with its handling. Then by gently beginning to move the third function lever, the helicopter rotor and radar should rotate. Slowly moving the lever farther they will switch off, and the starboard aircraft will take off. Moving the lever still farther will launch the port aircraft and at the same time raise the scoop for retrieving the aircraft. With both aircraft launched the scoop can be raised and lowered at will. Aircraft range is about 40 feet depending upon the strength of the elastic bands. However, it is important not to overload the servo or damage may result. The aircraft perform in dart fashion, and with practice they can be aimed quite accurately.

Chocks away! •



Closeup view of recovery frame and net launching release triggers, and partly completed tower superstructure.

"FRANK" ADVICE for Beginners

By DAVID FRANK . . .

In the last issue I discussed the types of hulls, radios, and engines that are available to model boaters. In this issue, I will discuss some of the tools and equipment you will need to build, operate, and maintain your model boat.

Most people already have basic hand-tools that are used for working around the house or on automobiles. If you have a set of screwdrivers, a hammer, pliers, some wrenches, and a socket set, you already have a good start.

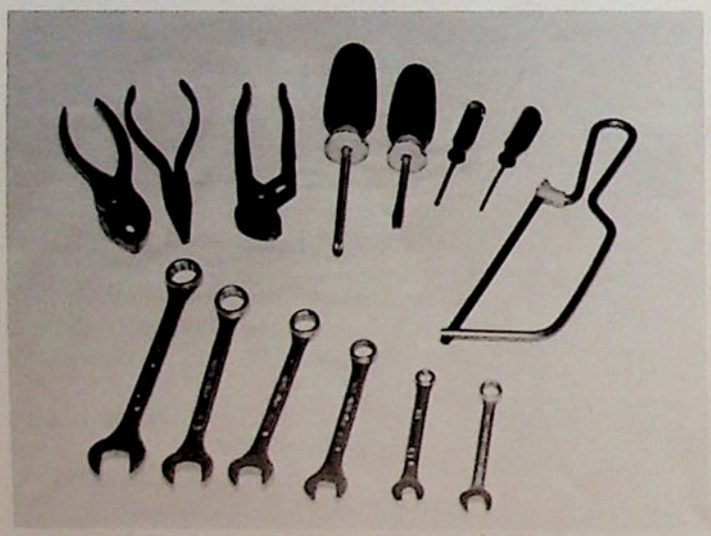
If you plan to build a boat from a kit, you'll need a drill and drill bits, some small clamps, a sanding block, a small block plane for trimming edges of plywood (I've found that a Stanley Surform tool works well for this also), wood files, and some type of saw for making a building fixture and starting stand. Scratch building or building from plans requires the use of a Scroller Dremel Saw or band saw for cutting out the plywood frames and sheetings. A utility knife and straight edge works well for cutting straight edges in 1/16 or less thick plywood.

A Dremel Mototool with a saw blade is handy for cutting holes and slots in a fiberglass hull, cutting the center of plywood sheeting, and cutting spruce stringers. I also like using a toughgrind cutting wheel on my Dremel tool for cutting brass tubing and rod, music wire, thin brass, aluminum sheets, steel flex shafts, and it also works good on fiberglass.

If you plan to build a plastic electric boat kit, a minimum of tools you will need will be a drill and bits, screwdrivers, a soldering iron and solder, and a hobby knife.

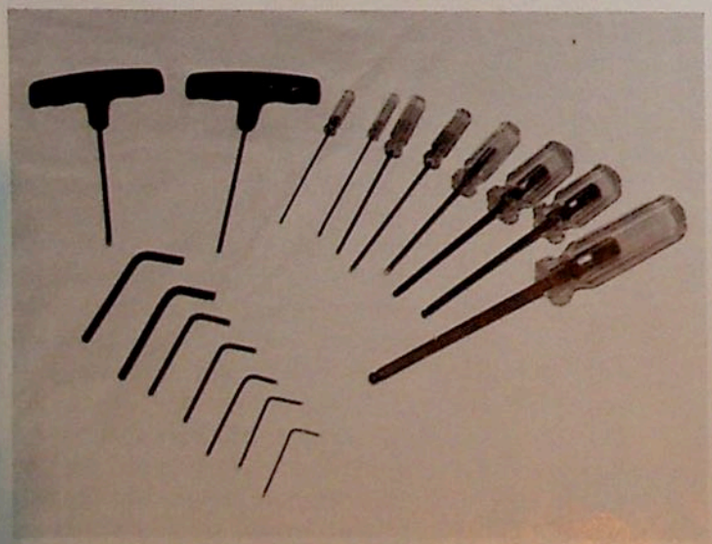
Working on gas-powered boats requires a few tools that are not normally found in everyone's tool box. Since most screws on model engines and boat hardware are Allen socket head-type, you will need a good set of Allen wrenches. I most often use the type with a screwdriver handle and ball tip. Tee-handle Allen wrenches are good when you need a lot of torque. 'L'-type regular wrenches work well for getting into tight places.

A set of open box-end combination wrenches from 9/16 to 1/4 would also be needed. Some other tools I like to keep in my tool box are: needlenose pliers, wire cutters, a small pair of channel-locks, vise grips, a tape measure, small 1/8-inch screwdrivers, a small hand hacksaw, a few files (wood and metal), and a set of nut drivers. Something else I always keep in my tool box is a bottle of cyanoacrylate glue and glue accelerator for quick repairs from unexpected

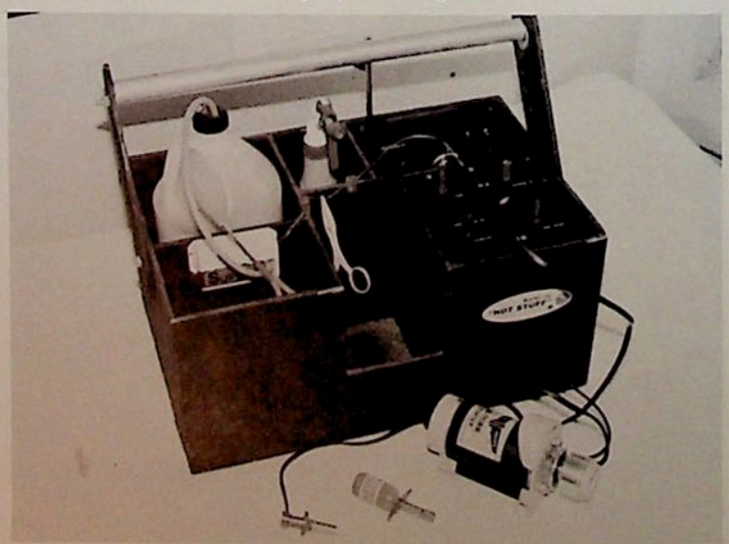


Some basic tools you'll need to get started in model boating.

Tools for working on wood boats. Stanley's "Surform" tools (center) are great for trimming plywood edges.



Different types of Allen wrenches. The ball-tipped type work well on socket-head bolts.



Author's homemade field pit box holds everything needed for starting a gas-powered model boat.

contact with a buoy, another boat, or the shore. With all of these tools, you'll need something to put them in. What I like to use and seems most popular with other model boaters, is a fishing tackle box. They have large compartments for tools and small ones for parts and things.

Probably the most expensive purchase next to the model boat itself will be the field starting equipment. If you have an electric boat, all you should need is a 12-volt fast charger, and it's a good idea to have three battery packs for continuous running. . .one in the boat, one charging, and one cooling down.

Starting a gas boat can get a little more involved. All gas boats will need an electric starter, although Jerry Dunlap told me about the good old days when model boats were started with a pull cord. The type of boat you have will determine the type of starter you will need. If you have an outboard, you'll need a rubber cone on your starter. If you have an inboard, you'll need a vee groove in your starter flywheel. Most electric starters come with both. To power your electric starter, you could run a long cord from your car battery or carry around a small motorcycle battery. It's a good idea to have a battery with at least a 10-amp hour rating for a day's worth of heavy use.

To ignite your glowplug you have several choices. Most beginners start with a 1.5-volt dry cell and Kwik clip. McDaniels RC makes hand-held igniters called Ni-starters and Tork starters. These have a 1.2-volt Ni-Cd battery which usually lasts a whole day and can be quick-charged from your car battery. I prefer using the Tork starter which is also a glowplug wrench so you can loosen the plug to reduce compression to make starting easier. You could also buy a power panel, which reduces the 12 volts for your electric starter to the proper voltage for igniting your glowplugs. Most power panels also have plugs for your starter and an electric fuel pump. I like to use an electric fuel pump because it's faster and easier than a hand-crank or bulb-type pump, but hand-crank pumps are more reliable, as I've seen a few electric pumps fail.

To carry around your field equipment, you could easily make a small box with handles or buy one of the many field pit box kits which have compartments and dividers to hold your battery, fuel, starting equipment, and which usually have a place to mount a power panel.

Getting you and your boat off the ground can make working on your boat a lot easier and more comfortable. I've seen everything from homemade tables with folding legs (which can be bought at most variety department stores) to bringing out the kitchen table! Small folding card tables work well for this also. A good source of small tables is your local Goodwill store.

Power tools that are ideal for kit or scratch-building of model boats.

Be sure that if you go out to run a gas boat, you have some way to get it back if it dies in the middle of the lake. Small inflatable rubber rafts work well, as do small row boats. Another good way to retrieve your boat if it's within about 50 feet of shore is to use a small casting rod and reel with a rubber ball or a tennis ball on the end of the line.

Before you go to run at a lake, be sure to find out if model boats are allowed. Have someone with you in case you get in trouble. Never run a model boat where there are swimmers, and caution people near the shore that model boats do occasionally run aground. It's also a good idea to join a national model boating organization, as they provide accident insurance and also are a good source of help, as most members are more than willing to help out the new model boater. In the next issue, I will discuss step-by-step how to finish model boats of different materials, and the types of paints and fillers available.

A fishing tackle box has lots of room for large tools, and many compartments for organizing small parts and tools.

If you are a new model boater or even thinking about starting and have questions, write to me care of *USBSM*. Being a new model boater, I may not have all the answers, but I know a lot of experienced model boaters who can probably provide me with an answer. •

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"KAAMMAHA"

By HAROLD "MIKE" SRIVER . . . Mike loves to scratch-build large scale-like models for steam, a power mode with which he is very familiar. Let him tell you how he designed, built, and named (!) this vessel.

There is nothing new under the sun. By that statement, I mean you see something you like here and something you like there, put them together and you have something original. Or do you really? Nevertheless, the result is called original.

In that way the "Kaammaha" came to be. I had a desire to build an open steam launch of the "Gay 90s," a design where the working steam engine could be seen and appreciated.

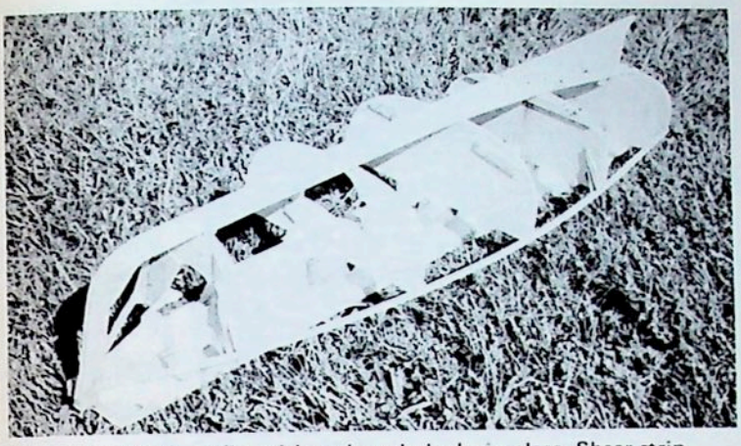
I have a steam tug, the "R.E. Toucher," with the engine hidden under the deck. That is much like a beautiful girl seen on the street. . .you know what is there, but you can't see everything to really appreciate her.

Nevertheless, in the summer of 1968 I started looking for ideas and finally found a hull design that looked ideal, providing some modifications were made.

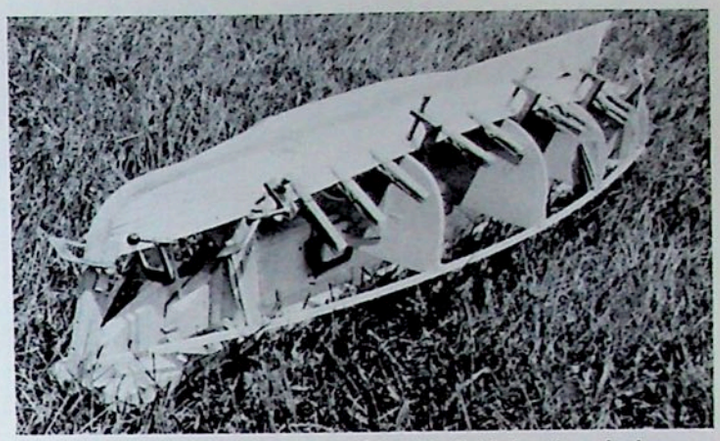
I started drawing designs that would be of a size to accommodate a 14-ounce propane tank, a vertical 1-1/3-quart boiler, a Stuart Turner D-10 steam en-

"Kaammaha" under a full head of steam moves right along and has plenty of power for 45 to 50 minutes running on one boiler filling.

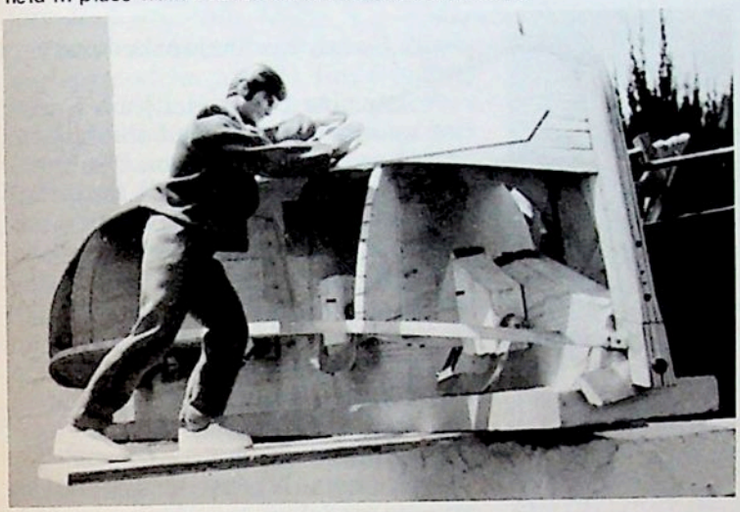
The author and his "Kaammaha" at water's edge. As you can see, this steam powered vessel is of substantial size.



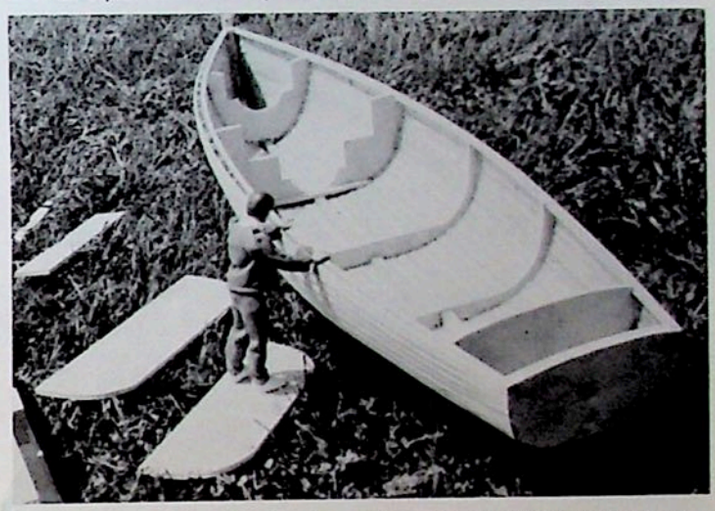
Basic framework on jig, with garboard planks in place. Sheer strip held in place with rubber bands while glue hardens.



Continuation of planking. Each bulkhead is divided and marked with an equal number of spaces, which helps plank shaping.



Aha! Just as we suspected, Mike had a very skilled assistant who really did all of the diffucult work. Note plank lines on bulkhead.



Off the jig and rolled over for inspection. Mike probably helped here, as the assistant is only 10-3/4" tall.

gine, and the R/C gear and accessory batteries for an electronic steam whistle and operating searchlight. I also wanted the hull to be of lapstrake construction, so typical of launches during that period of time. The result came to an overall length of 44 inches, a beam of 13-1/2 inches, and the weight in the water came to 33 pounds.

I designed her with a deep keel at the stern to accommodate a high pitch, four-blade, 3-1/2-inch diameter propeller. I determined that to be "just about right." The design should be based on the performance of my tug, which has an L.O.A. of 46 inches, beam of 15 inches, weight of 65 pounds, and indicates a pulling force of 3 pounds at 65 pounds boiler pressure with a 4-1/4-inch diameter, four-blade, high-pitch propeller in a Kort Nozzle; enough power to tow me around my lake in the Pram. I believe a Kort Nozzle is just the rudder a tug needs for power and maneuverability.

You might know who gets the privilege of sanding the first primer coat. Note how lap-straked planking is blended into stem. "Looking good, buddy. Need some more elbow grease?"

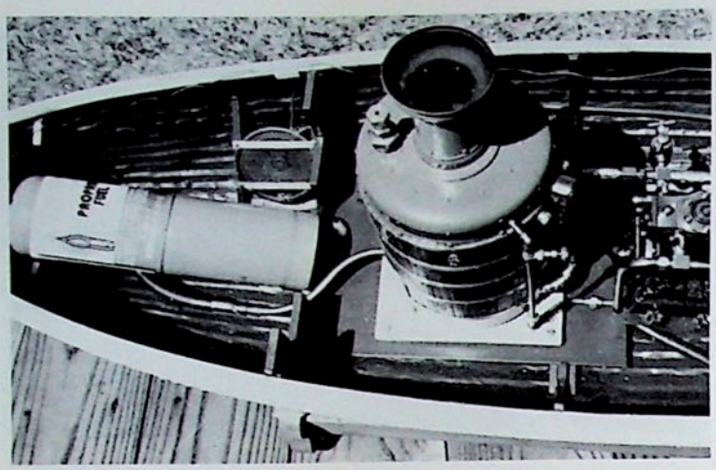
As it turned out the "Kaammaha" propeller is ideal. At 10 pounds boiler pressure, she does a good scale speed. At 65 pounds boiler pressure, she imitates a hydro. She also steams for 45 to 50 minutes on one boiler filling; about one quart of water.

The propeller is oversize for true scale, but so what? You don't see it in the water, and performance does count with me. I know from experience that you can have all the power in the world, but if you don't get it to the water, it is worthless.

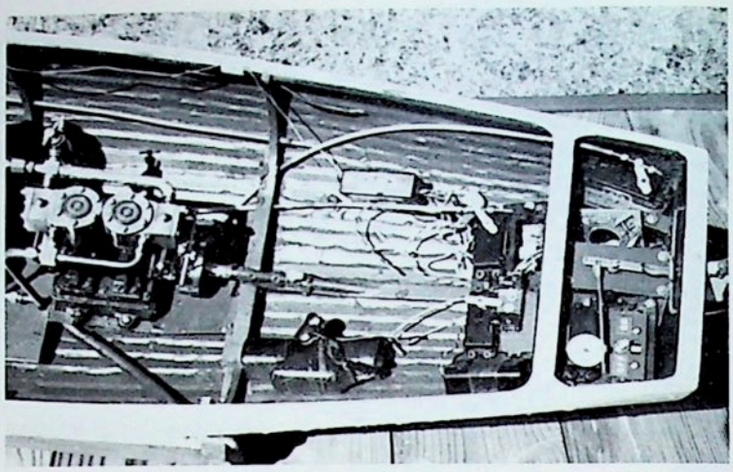
One of the fun things of designing an open launch is to conceal all the unrealistic components necessary to operate it and have all the visible components to scale and as realistic as possible. My final design does that, as you can see.

As the photos show, she was constructed upside down on a jig. There are 16 planks or strakes to each side, and each one must be tapered and fitted. . . 32 of the little buggers.

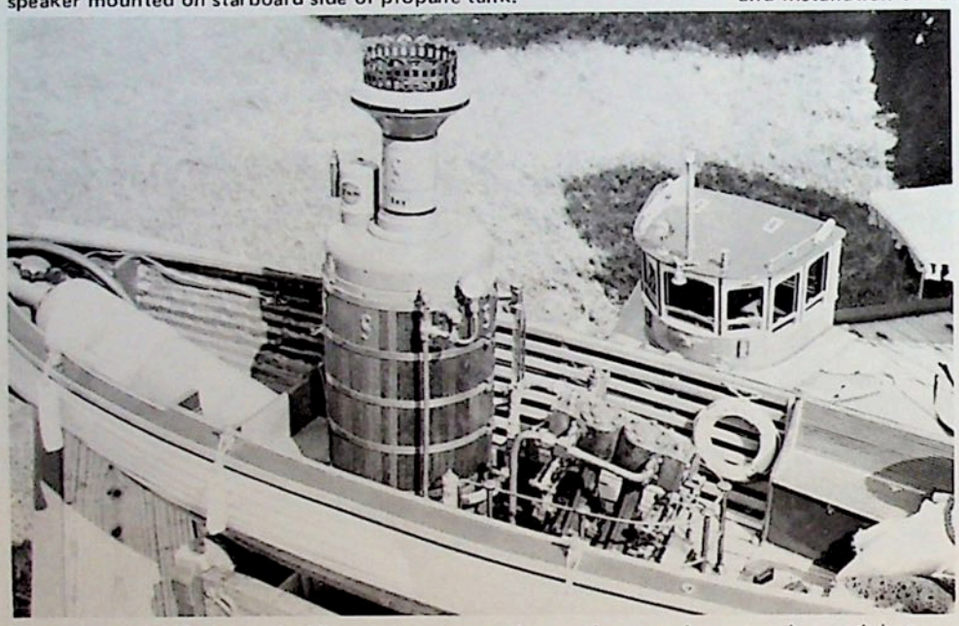
By dividing the distance from the



Nice to have plenty of room for all the required equipment. Note speaker mounted on starboard side of propane tank.



Looking straight down at the Stuart Turner D-10 steam engine and installation of radio gear.



Boiler holds 1-1/3 quarts. At 10 pounds pressure, the vessel moves along at scale speed, but Mike has had it practically planing in a very unscale manner at 65 pounds!

keel to the gunwale into 16 equal parts at each bulkhead or former, I determined the width of each strake at these points and tapered each one accordingly, but making each one 1/8-inch wider than the width indicated, so when installed each strake overlapped the one under it. Starting at the keel is the only way this can be accomplished, and a word of caution: do not finish one side before starting on the other, instead do one or two planks alternately on each side, otherwise your hull may be out of line when finished.

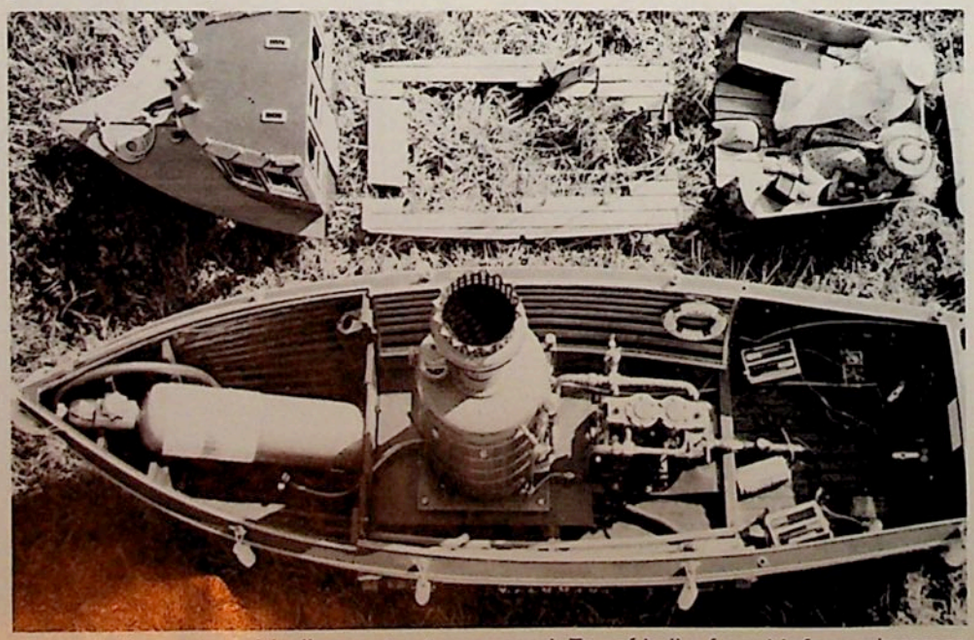
This was my first lapstraked hull; they are fun and very interesting to do, but they do take time. I found that I could fit and epoxy four strakes a day. With 32 of them to do, that came to eight days of planking, but the clean design and the lack of any tendency of the hull to roll on turns because of the lapstraking was well worth all the effort.

I must mention that the bulkheads, keel, and transom are made of waterproof, aircraft plywood, but the strakes are cut from a good old piece of lumberyard pine. A 1 x 12-inch sawed into 1/8-inch thick strips did the job very well, and several coats of epoxy and paint should keep the water from the wood. So far this has worked out very well.

A note about my paint jobs. I scout the area stores and find the color of paint I want in a spray can. Whether it cost 26 cents or $2.60, it's the color I am concerned with, but what is most important is the final finish over the colored paint. For that I use, again from a spray can, several coats of Flecto Varathane, Liquid Plastic, clear, either in the glossy finish or satin finish, depending on the desired effect. That is the real finish and protector of the color underneath.

This, no doubt, may be unorthodox to some modelers, but I have a scratch-built, 52-1/2-inch Coast Guard Utility boat, powered with an O&R 3/4 hp gasoline engine, reaching speeds of 22 mph, that is finished that way, and I have been running her seven years . . . sometimes accidentally on shore . . . and the finish is still the original.

Back to the "Kaammaha." As I noted previously, the final design came about to conceal the unrealistic components. The propane tank under the fore



Overall bird's-eye view with all spuerstructure removed. Top of boiler funnel is from a kerosene lantern. Mike's wife turned to and made the period clothing for the passengers.

deck had to be on a 20-degree angle from horizontal to feed the burner properly. The burner is from a Sears propane camp stove. I experimented with various burner designs of my own, but, so far, Sears is the best.

The male figure in the cabin would be 10-1/2 inches tall to be to scale. However, he is cut in half at the waistline, as under him is a four-inch speaker for the electronic steam whistle. This and the searchlight on the cabin roof are operable by R/C or by switches in the stern hatch, used to demonstrate when in a dry display. These are connected to the hull by an "umbilical" cord, plug, and socket, as the cabin and fore deck are removable.

The vertical boiler is a gem. One of my late modeler friends, Jim Trower, of New Port Richey, Florida, and I collaborated on the design, and he built it. . . the same for the horizontal boiler in the "R.E. Toucher."

We hydraulically tested the boilers to 150 pounds, then installed the safety valve to "pop off" at 60 pounds P.S.I. They carry enough water to propel the models 45 to 50 minutes.

Jim became well-known around the country for his expertise in boiler design and construction and used to receive orders for them from steam buffs all around the country.

Now to the steam engine in the "Kaammaha." It is the popular Stuart Turner D-10, with reverse mechanism. It is a proven, desirable engine for models of this size. They may be purchased in three forms: rough castings, finished castings, or finished engine. I get the finished casting kit with the reverse mechanism, and, as a rule, a little filing to fit is all the work needed in assembly, and they seem to last forever when kept properly lubricated.

The boiler and engine are mounted on a common bed plate of 1/8-inch aluminum, cut and formed to fit on the proper bulkheads, easily removable for cleaning and maintenance.

The drive train is the same as I have been using for many years in all my models, and after seven years I have yet to replace anything but the prop. It is Octura all the way; universal, shaft housing, shaft, bearings, and drive dog. The prop is from another source, as at this time, Octura was not producing props in a large diameter, with four blades, suitable for steam power.

As you can see by the photos, the R/C components and accessory batteries are installed under the stern "U" bench seat and stern hatch, wherever they would fit, being sure the servos are in the best position to link up to the throttle valve, reverse mechanism, and rudder, through either flexible push rods or bell cranks and rods. The servos and switches operating the whistle and searchlight are also located here.

A better view of the passengers in their "Sunday Best", patiently waiting for the boiler to get up steam for a cruise around the lake. Fenders add an often overlooked touch.

A dummy tool box was made to cover the large throttle valve, and the bottom of an old kerosene lamp made a nice spark arresting grill work on top of the funnel.

The finished "Kaammaha" is all I could hope for in performance and appearance. After her initial launching, all that was needed to make her sit right on the water was the addition of a few ounces of lead in the stern. Not bad, as after all, aren't there times when we all have a little lead in our stern?

I imagine you have been wondering about the selection of the name "Kaammaha." It came about this way: For some time now I have been wanting to name some of my models after our four wonderful grandchildren. However, that could mean four more models, and which one would I favor by naming first?

I had an inspiration. Without showing partiality, and saving time, I would name this model after all four grandchildren! I took the first part of each name, Katie, Aimee, Matt, and Hal, and came up with "Kaammaha," and with a name like that she had to be Hawaiian with Honolulu her home port!

My steam tug, "R.E. Toucher," is named for my profession before I retired to Clearwater, Florida, from Chicago, some 13 years ago. I was a mechanical illustrator and photo *retoucher.* I also have another original de-

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sign model, a 48-inch, water jet-driven cruiser with a 1 hp gasoline engine. It does everything a full-size one can, and is named, of course, "Jetabel," what else?

For the "Kaammaha," my wonderfully patient wife designed and made the 1890 style clothes for the nine-inch girl dolls, and did a fine job of it too! This makes me wonder. . .is there any married modeler whose wife has never said, "Aren't you ever coming to bed?" or as she walks by the work shop door, "Do you have to make all that sawdust, it's a fire trap in there," or the one I never could understand, as I am delicately filing a soft piece of aluminum, "Must you do all that pounding so late at night?" ah yes, they are wonderful!

Of the total time taken to construct any scratchbuilt model, I find the time is divided into the following categories: 10 percent for research, 10 percent for construction, 30 percent going for supplies, and 50 percent searching for tools you have just laid on the workbench. Surely every workbench must have a tool-snatching Gremlin such as mine. (*Is there any other way? wcn*)

As you must know, Gremlins are little, invisible creatures that lurk in hiding places on every workbench and dash out to snatch an idle tool as soon as your back is turned. They delight in hiding tools under rags, scrap wood, sawdust, and, at times, even under the workbench. Then the game of seeking begins. You know just where you put the tool down, but it has disappeared in a moment. There must be other workbenches plagued by these little rascals. I hate to think mine is the only one infested with them.

In closing, I must mention that accurate measurements are a must in model building. I use my own system, which gives me a measurement of "a long sixteenth" or "a short seven and three eighths." I find that system hasn't failed me yet.

If by now you are completely confused or amused and would like to contact me with any questions regarding our hobby, please feel free to do so. A stamped, self-addressed envelope included would be greatly appreciated, but please don't ask for plans of any of my models, there aren't any as of now, but who knows what the future will bring. At the present time, they are mostly on scratch paper and in my head. Like Topsy, they just grew.

Harold "Mike" Sriver, 46 Crabapple Circle, Hendersonville, NC 28739 •

Steam Launch . *Continued from page 45*

satin finish on all interior parts.

With planking completed, you will be over the roughest part. The remainder of construction is straightforward and should need no explanation, other than the notes on the construction drawings.

If you use one of the Saito steam engines, you may have trouble reading the English-written-by-Japanese instructions, and so a few words about the operation of the engine are in order. The boiler should be filled with distilled water until the open overflow bleeds water. The oiler should be filled with the suppled cylinder oil, and bearing resevoirs should also be oiled. The burner valve should be closed until after the burner has been preheated properly. Preheating is done by putting a small alcohol burner under the main burner assembly. This heats the vaporization chamber, to cause vaporization of the alcohol. After several minutes of preheat, the burner valve can be opened and the burner lit with a match. If, on first opening the valve, liquid alcohol comes from the jet, then the burner was not heated sufficiently. If you had a flame-up from the raw alcohol, close the valve, blow out the fire, clean up the excess alcohol and start over with preheat. When properly operating, the burner will have a forceful blue flame and a roaring sound similar to a blowtorch. The burner used for preheating can then be removed. The burner is supplied with a cleaning needle, and it may be necessary, after several hours of operation, to remove the screw plug at the rear of the jet and push the cleaning needle completely through the jet, to clean any gunk from the jet. Lifting out the front floorboard and removing the two mounting screws for the burner tank will allow you to service the burner

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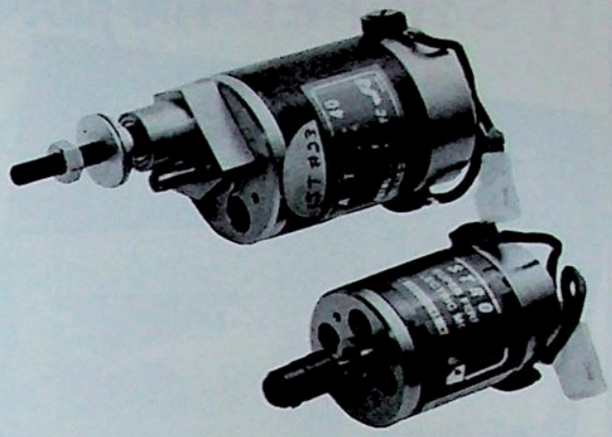

All ASTRO SUPER FERRITE MARINE MOTORS use SILVER GRAPHITE BRUSHES. Sure, silver costs a bit more than copper, but silver brushes won't burn the commutator, won't spark, and won't cause radio noise.

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Astro 25	14 Cells	1.50"	9000	$74.95
Astro 40	18 Cells	1.75"	12000	$89.95

ASTRO GEARED MARINE MOTORS

MOTOR	BATTERY	PROP	RPM	PRICE
Astro 10G	6V gel	2.00"	4000	$ 84.95
Astro 15G	12V gel	2.25"	5000	$ 89.95
Astro 25G	12V gel	2.75"	4000	$ 94.95
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more easily. You should not use rubbing alcohol in your burner, but rather, a good grade of stove alcohol, available in marine and paint stores.

Remember that all major components of the launch should be easily removable. The canopy just slips off the support poles, and the poles slip out of their mounting sockets. The boat can then be operated without the canopy.

All steam connections should be made with silicone rubber tubing (model airplane type), which will allow the floorboards to slip out without removing the engine and boiler. The condensr can be slipped out of the way to allow removal of the main floorboard assembly. The main floorboard assembly carries the two side seats, rear seat support, and servo tray, so make all pushrods quickly removable. The floorboard just rests in position; no screws are necessary.

The pushrod controlling the forward/reverse lever on the engine should have the spring override and shock absorber shown on the drawings, to avoid causing undue wear on the valve linkage components caused by overtravel on the control. The throttle should be set up so that, when at full low throttle position on the transmitter, the throttle valve on the boiler is not fully closed without also moving the throttle trim lever on the transmitter to full low throttle trim position. This is done to help prevent unnecessary strain on the throttle servo when stopping the engine with low throttle position. At full low throttle position and low trim position, you should have a fully closed throttle.

At first, my boat was operated with no trim ballast, but I have since added ballast to the bow section to get the boat on the designd water line. No other changes have been necessary, and I have been very pleased with the boat. It looks good on the water, and also makes an interesting and beautiful display model. Take your time, do a good job, and you will have a valuable and unusual model. How many steam launches have you seen at the pond lately?

If you decide to build the model, it is assumed that you will purchase the full-size plans from *U.S. Boat & Ship Modeler*, as the exact shape of the frames is important. I hope this article will result in a new interest in the fine, classic designs of years past. Radio control seems so fitting for operation of these quiet and graceful models. •

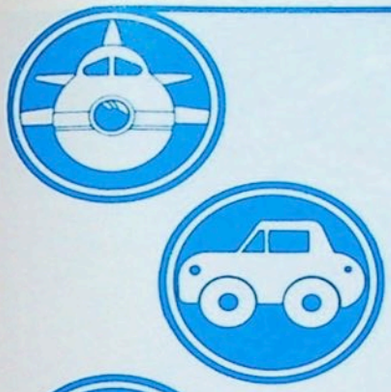
Radio Waves . . *Continued from page 39*

does the radio. The Digipace will not prevent battery failures, but it will do more to keep you informed as to their condition than anything else I know.

In the case of Ni-Cd batteries, there is one basic fact that must be understood. The only sure way to establish their condition is to measure their *capacity*. And there is only one way to do so, by discharging the fully charged battery at a known rate, and to measure the time it takes for it to get down to 1.1 volts per cell. This is the discharged cell voltage, as established by the makers of such cells. The Digipace does just that for you, discharging the battery at 300 milliamps, and giving you the elapsed time in minutes on a digital display. Simple arithmetic then gives you the battery's capacity, which should closely approach its rated value.

Again, no other instrument can do that for you. Not the ESV (Expanded Scale Voltmeter), be it analog (dial), digital, or bar-graph LED (Light Emitting Diode). All of the latter have a place in the R/C scheme, which will be discussed in time, but none will take the place of a timed full discharge such as done by the Digipace. In addition to helping you calculate the full capacity of your batteries, the Digipace can be used to calculate your available running time. . .down to the minute!

To begin with, running time is a widely varying figure, determined by many things. Not only is the basic current



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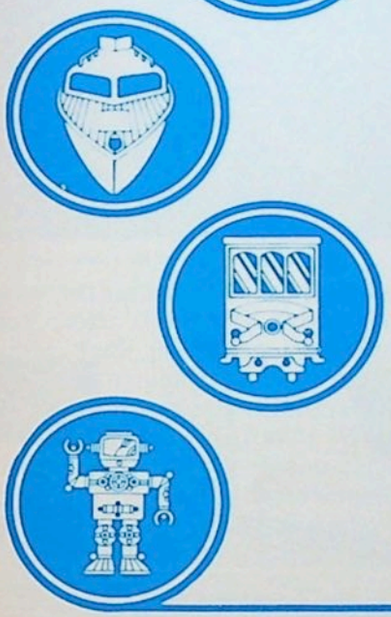

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drain of your equipment to be considered, it can be increased by your use of high friction linkages, servos installed so as to bottom at full travel, back pressure on rudders, and even by how unstable your boat is and how nervous you are on the controls. Once you have determined the total capacity of your batteries with the Digipace, you can recharge them, run for a carefully measured amount of time, and using the Digipace again, discharge the pack the rest of the way down. A few seconds with a calculator and you have the average current consumption for your boat and the total time you can safely operate it per charge.

Fully automatic, the Digipace recharges your battery at the proper rate after the discharge is complete, and comes with a full set of instructions for its use. It is available either assembled or in kit form, for you who like to roll your own. It is not an electronic beginner's kit, even though it is not extremely complex, and does not require any complicated tuning or adjusting when completed. The kit is $79.95, and the assembled and tested version is $94.95. You should have an Ace R/C catalog anyway. . .it is two bucks from Ace R/C, P. O. Box 511, Higginsville, Missouri 64037. Say hello for me when you write!

See you here next time, and in the meantime, keep your powder, and your radio, *dry*! •

Skuttlebutt . . *Continued from page 24*

All of us in the industry and you as modelers owe a debt of gratitude to this club in particular for their hard work in establishing the format for the show concept as it exhists today. Most of the shows around the country follow the format developed in Toledo, and other large shows are discussed with this show as a standard of comparison.

In recent years the show has outgrown the facility, and the result is a waiting list for booth space by new companies and additional booths for companies already at the show. The solutions for the future are the possibility of moving to another exposition hall or the expansion of the present one. Whichever route is taken by the sponsors, there is no doubt that more space is badly needed. It may be surprising to note that the club does no local advertising, as they are not interested in drawing local, non-modelers, the show aisles already being jammed during much of the viewing time. This is a situation which the sponsors of other struggling new shows can only dream about.

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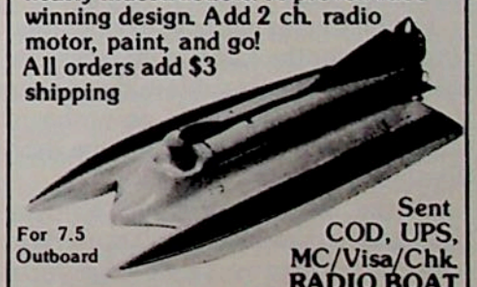


For 7.5 Outboard

Sent COD, UPS, MC/Visa/Chk.

RADIO BOAT

3800 Firestone Blvd. South Gate, CA 90280, (213) 564-5801 – CA add 6% tax

The Toledo show has more model boat manufacturers exhibiting than any other show on the circuit. It is the best place to spot trends, as most manufacturers use the shows to do market research by showing prototypes of products that are still not committed to production and the full investment that is necessary to bring a product to the shelves of your local hobby shop. It is always interesting to note what "new" products actually make the leap to production status.

Continued on page 68

SHIP'S STORE

All material published in "SHIP'S STORE" is quoted or paraphrased from press releases, furnished by the manufacturer and/or their advertising agencies, unless otherwise specified. The review and/or description of any product by USBSM does not constitute an endorsement of that product, nor any assurance as to its safety or performance.

Steamboat "Delta Queen", from Hartman Fibreglass R/C. Fiberglass hull and deck, plus full-size plans.

Prather Products, 1660 Ravenna Ave., Wilmington, California 90744, announces the "Lap Cat II," a new tunnel boat kit for the 7.5cc outboard engine. Improved performance is the primary advantage of the Lap Cat II. The unique bottom design allows the boat to accelerate faster and reach a top speed quicker than current designs. It also enters turns smoothly, without hooking. With a stock 7.5cc K&B outboard, the boat will reach speeds near 50 mph while still remaining stable and maneuverable.

Optional items available from Prather Products for the Lap Cat include: a radio box kit, an adjustable outboard motor mount for the K&B, an outboard cable set, and servo savers (for the K&B Outboard).

Prather also offers a simple, economical, and accurate prop balancer. Basically, it's a pair of single-edge razor blades mounted on a lexan base and side rails plus a precision ground shaft on which the prop is mounted. Be sure to keep it in a box or well covered when not in use. . . those blades are pointing straight up!

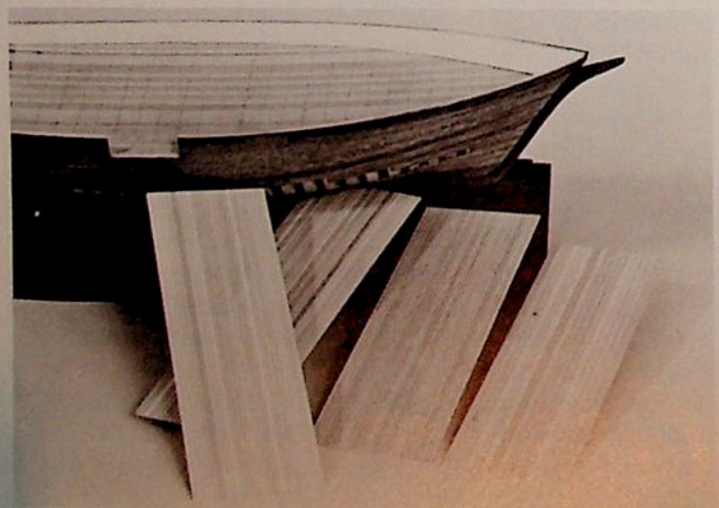
From the Deep Vee Running Hardware sets, Prather is also offering stainless steel struts with high speed needle bearings installed. A stainless steel ferrule is also installed to accept a brass shaft log. Mounting brackets are aluminum, with mounting holes already drilled. Available in two sizes; for the 3.5cc inboard, and for the 7.5 and 11cc inboard.

The final new items for now are .035-inch stainless steel trim plates to provide stability for Mono and Deep Vee hulls, which allow for easy adjustment of the hull's ride attitude. Mounting holes and pickup tube are provided. Two different sets are available, for the 3.5, and for the 7.5 and 11cc inboards.

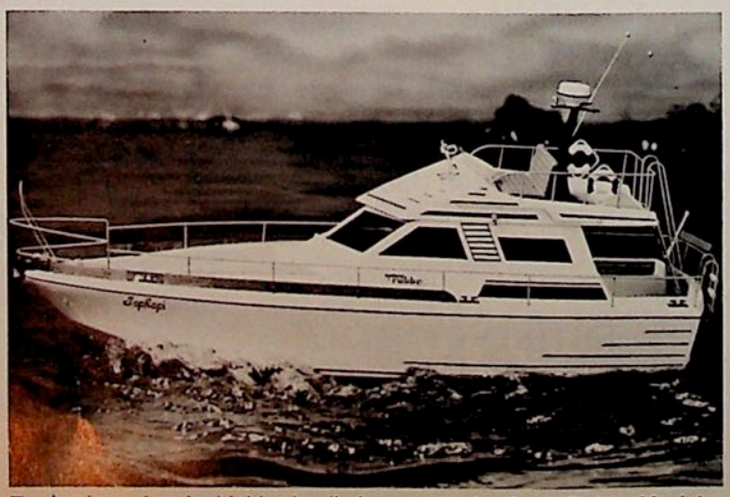
* * *

The Robbe Model Sport "Koh-i-noor" sailing yacht.

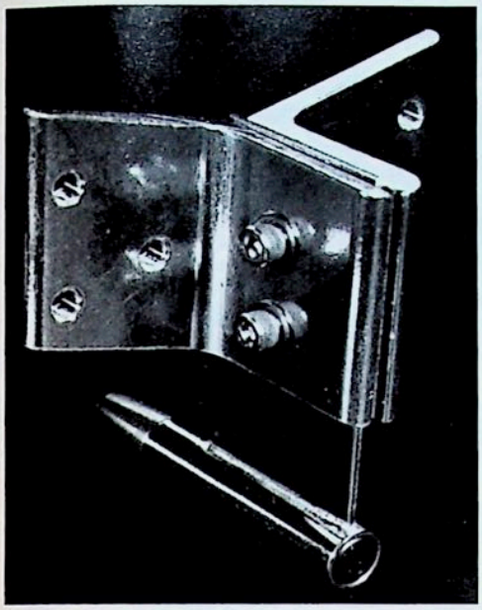
Robbe Model Sport, 180 Township Line Road, Belle Mead, New Jersey 08502, phone (201) 359-2115, has several new boat kits to offer. First, there is the "Koh-i-noor," a semi-scale offshore sailing yacht. With a length of 40 inches, a beam of 9-1/2 inches, and a mast height of 54 inches; it carries 520 sq. in. of sail. It features a one-piece Plura (R) hull with integral cabin, factory installed ballast keel, pre-drilled aluminum mast and booms, pre-sewn sails, decal set, glue, basic tools, and boat stand material included. A sep-



New ship decking in basswood from Northeastern Scale Models.



Topkapi, semi-scale, highly detailed motor yacht, from Robbe Model Sport.



Prather strut with brackets.

arate fitting set includes pre-bent bow and stern rails with fabricating jig, wood deck planking, running lights with mechanical memory switch, spinnaker booms, etc. An optional drive set provides an electric motor, Mini Kompakt gear drive, speed controller, and charging cable, for those times when the wind suddenly dies and your boat is becalmed in the middle of the lake! Building time of the boat is approximately 25 hours.

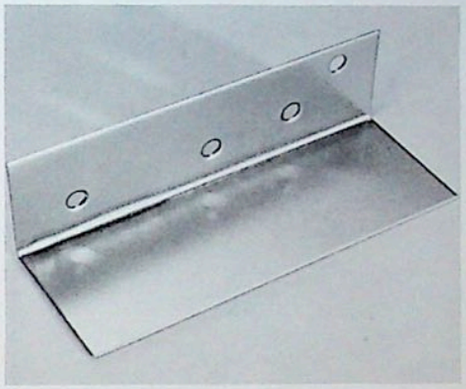
The next Robbe offering is the "Topkapi," a semi-scale, highly detailed motor yacht. The one-piece Plura hull and deck is 30 inches long, with a 9-1/4-inch beam. Pre-painted cabin and factory trimmed flying bridge speeds construction. Included in the kit is die-cut real wood planking, all fittings (bow rail, ladders, seat, steering wheel, railing, and life belts), rudder system, decals, tools, adhesives, boat stand, drawings, and instructions. Building time is approximately 15 hours. A separate drive set is available, with Navy Kompakt-geared motor, electronic Mini 200 motor control, and eight-cell 1.2 Ah fast charge battery.

Finally, Robbe offers the sassy little "Sea Horse" outboard power boat. With an overall 28-inch length and 8-1/2-inch beam (hull is actually 24-1/2 inches long), the Sea Horse is driven by the optionally available "Roqua" electric outboard motor, using a 9.6-volt battery pack and Mini 200 speed controller. The vacuum-molded hull and deck are die-cut to shape and predrilled, for strength and durability. Total assembly time should only take two evenings.

* * *

Dumas Products, 909 East 17th St., Tucson, AZ 85719, phone (602) 623-3742, has added a 1/8-scale model of

Prather "Lap Cat II" tunnel boat kit for 7.5cc outboards.



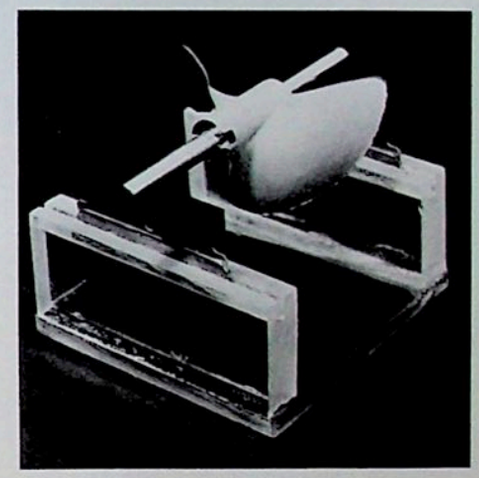
Prather trim plates.

the turbine-powered Miller American Hydroplane to its line of radio-controlled model power boats. The new model is 43 inches long, with a beam of 21 inches, and takes .60- to .67-size gas engines. A licensee of the Miller Brewing Company, Dumas has faithfully recreated the 28-foot, 6-inch Miller American which is currently touring the Unlimited circuit across the US. Realistic logos and lettering decals are a part of the kit.

The Dumas Miller American is built from die-cut birch and mahogany parts, and a running hardware kit is also available. Contact Jay for more information, and tell him we sent you!

* * *

The river steamboat "Delta Queen" is available as a kit from Hartman Fibreglass R/C, Box 86, 233 Melrose St., Argenta, Illinois 62501. At 1/50



Prop balancer from Prather Products.

scale, the model is 5.77 feet L.O.A., with a beam of 1.14 feet. . . definitely not intended for normal bathtub sailing! Total weight is 35 pounds, and hull depth is to scale. The fiberglass hull and deck and full-size plans are available from Hartman. This model is for the scratch builder who has the ability to use his own skills to complete the project. The model in the photo was built by Virgil Reynolds, East Liverpool, Ohio, using the Hartman fiberglass parts and full-size plans. For further information, contact Dwight at the address given, or call (217)795-2275.

* * *

It was back in the early 50's, when this writer was very much into HO model railroading, that the name North-

Semi-scale outboard "Sea Horse", from Robbe Model Sport.

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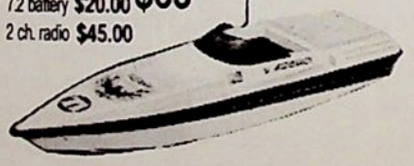

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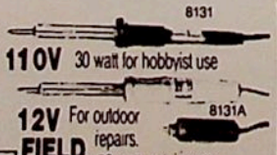

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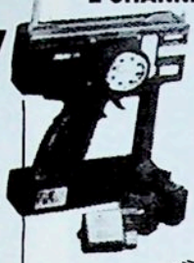

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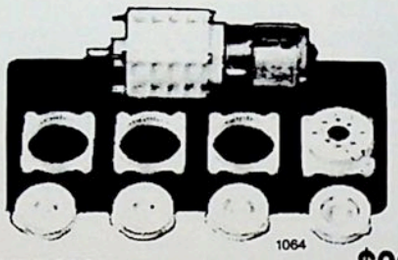

1064

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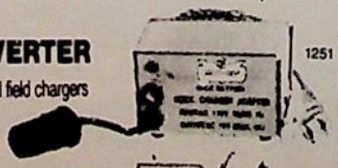

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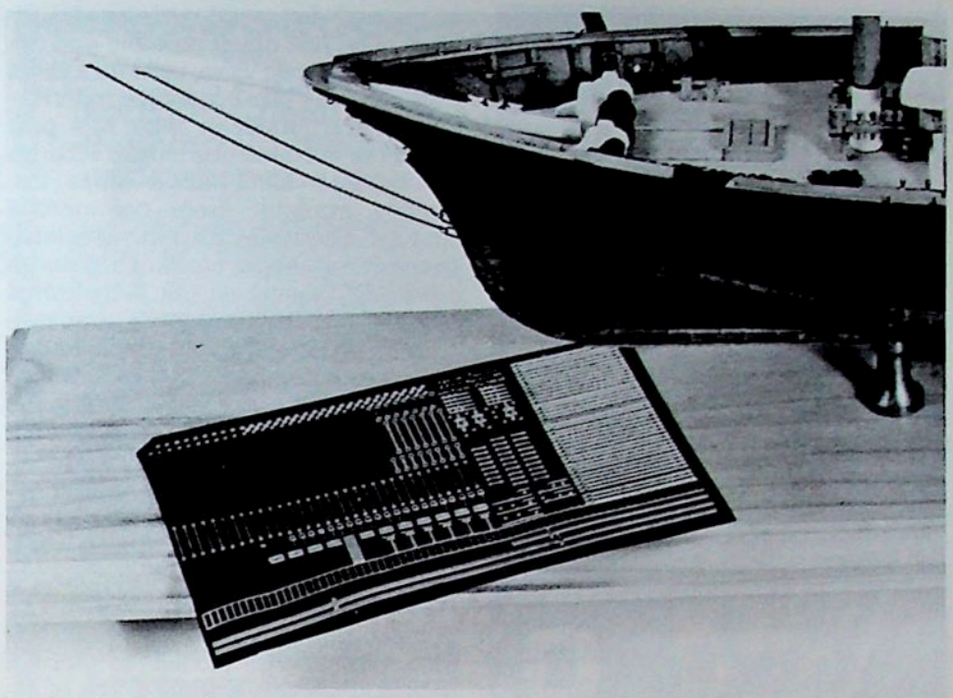
The Matrix "Spacecase" for model boats and aircraft.



Small scale parts made by phototeching process, from Cold Springs Iron Works.

eastern Scale Models came to his attention. It was around this time that Northeastern combined efforts with the Ambroid Co. to produce what we still consider to be the best in model railroad car kits. The first one we tackled was the Boston & Maine snowplow, with its super-small individual planks that formed the actual plow shape. We went on to build a whole string of the historic B & M passenger cars, all built with intricately shaped basswood parts made by Northeastern.

The company has been in existence for 40 years now, and is still known for its hundreds and hundreds of structurally shaped strips, panelled sheets, mouldings, sidings, I-beams, channels, angles, etc. used by amateur and professional modelers, architects, industrial designers, doll house hobbyists, theater and TV stage designers, and, of course, model boat and ship builders. In fact, if you are just getting into model boat or ship building, or have been and weren't aware of Northeastern's line, write or call immediately for the complete catalog, prices, and sample packets, at P.O. Box 727, Methuen, Massachusetts 01844, phone (617) 688-6019.

Northeastern's latest offering should be of special interest to builders of wooden boat and ship models, static or operational. It is scale ship decking in a natural variety of wood tones, with fine black lines representing caulking between the boards. Available in .050-inch thick laminated sheets measuring three inches wide by 22 inches long, it is offered in 1/16, 3/32, 1/8, and 3/16-inch spacing. Better order that catalog today!

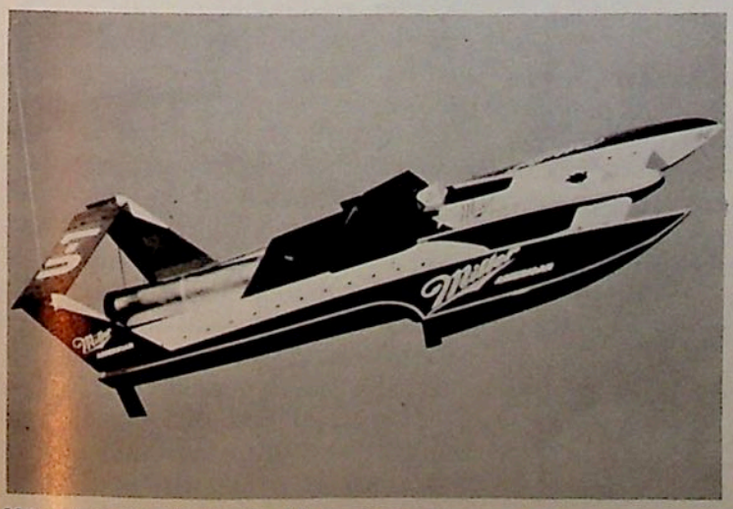
* * *

For the boat and ship modeler who is into radio control operation, Matrix Enterprises, Inc., 7015 Carroll Road, San Diego, CA 92121, phone (619) 450-9475, has a couple of interesting products to offer. First there is a protective carrying case for that all-important transmitter that is so often poorly treated and knocked around and yet expected to keep on working. Matrix offers its Modular Transmitter Case Kits from which you can construct a case to exactly fit your needs. They are constructed of tough, fuel-proof, 1/8-inch textured black A.B.S. plastic, with 1/4-inch foam lining. Polycarbonate handle, hinges, and exclusive SpaceCase polypropylene (living hinge material) positive-lock latch are included. Construction allows up to 10 cubic feet total size, for your model, transmitter, artworks, telescopes, cameras, or whatever.

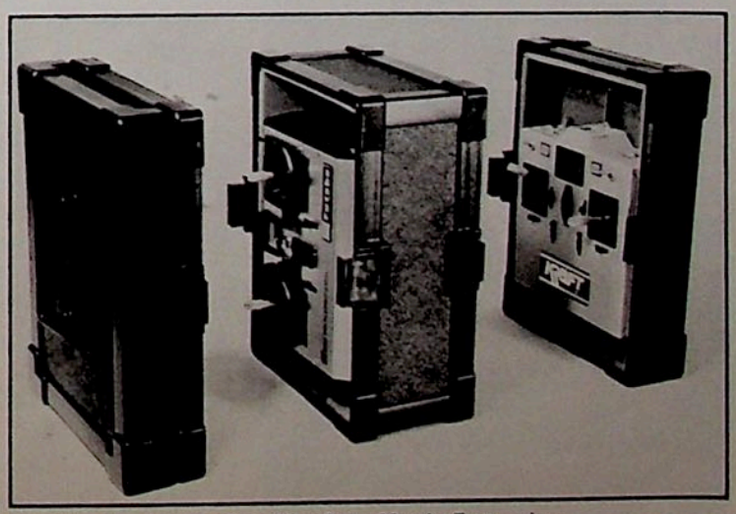
Don't let the photo of the Matrix "Hi-Tech" Field Case throw you. It happens to have been created for a model airplane enthusiast. However, using the same kit, a model boater would shape the removable cradles to fit his boat hull, and create compartments for the special necessities for a day of model boat operation. It includes the two molded drawers and the folding legs. Overall size (with legs folded) is 23-1/4 by 10-1/2 by 16-1/2 inches. Each drawer is 5-1/2 by 9-1/2 by 2-1/2 inches.

* * *

Phototeching has become the "state



Miller American hydroplane from Dumas.



Modular Transmitter Case Kits from Matrix Enterprises.

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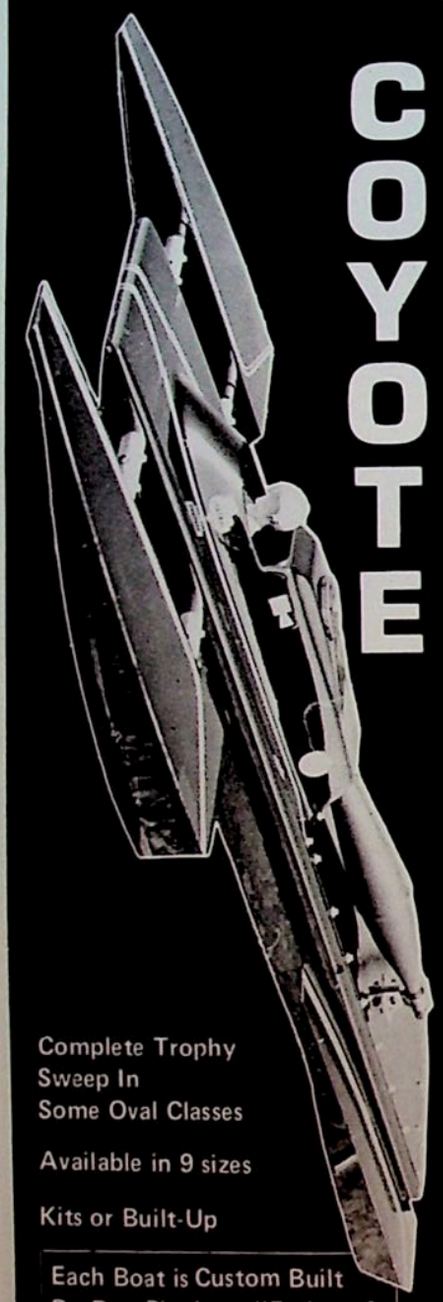

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of the art" for metal scale model fittings. The fine detail possible and the accuracy of scale were, up until a short time ago, only possible for the individual "scratch" modeler who was part jeweler or accurate draftsman. Fittings for modern steel-hulled ships are already available from commercial sources. The scales currently available from several companies range in scales to satisfy the enthusiastic steel-hulled naval ship model builder. The metalwork, painted and added to the model, enhances not only the beauty but also the accuracy of scale. The answer to the period ship modeler's plight regarding detailed metal fittings is now at hand.

Roger Teagarden, professional modeler, realizing the plight of his fellow-builders, has developed photoetched brass metal fittings for period sailing vessels. One scale is now available. The popular 1:96 size, 1/8 inch equals one foot, will enable the modeler to intermix with other scales without a loss of accuracy. As an example, larger eyebolts from 1/96 scale can be used on a 1/4 (1:48) scale model in situations where only the commercial oversized were offered previously. Metal fittings from this selection will assure the builder that all fittings on board will be in proper scale.

The fittings sheets are etched from .013-thick brass and mounted on a black rubber backing. Scaled in thickness as well as size, the selection is designed to accurately reflect the fittings on the real ships of the 18th and 19th century. They are flat-surfaced ironware, as was found on the real life ships of the period. These are not the round forms produced from brass wire.

This sheet, as offered, will contain over 250 pieces. Sheet #101 will contain such items as nuts, washers, padeyes, deadeye straps, cleats, mast bands, as well as many items not found in other commercial offerings. Sheets under consideration for later production will include items and scales that are in most demand by modelers. Please make your needs known to the distributor.

Taking the name of a real ship's iron works from out of the past, the company will be known as the *Cold Springs Iron Works*.

Each sheet will retail in the amount of $26.50, which includes shipping and handling. Distribution of this quality product will be made by The Dromedary, 6324 Belton Drive, El Paso, Texas 79912. Send a self-addressed, stamped envelope for details. Dealer's inquires are invited. •

Scuttlebutt . . . *Continued from page 63*

If there was any trend this year, it was in the area of electric boats; both high performance and scale. Most boat manufacturers are well aware of the popularity of electric R/C cars, both road and offroad. This means that there are modelers who are familiar with electric operation and own batteries, chargers, and radios that will directly adapt to most electric-powered boats. It is then an easy step to appeal for some variety by offering boat products that will require little additional investment to get into operation. Of course, the boat products should also appeal to the customer who isn't into cars and just wants the fun of operating a model on the water.

Last month I described the new Wellcraft model coming from M.R.C. It continued to get much attention at their booth and you can anticipate a strong advertising program from this company to build interest in the latest addition to their line. M.R.C. is aggressively trying to develop the "cross over" market among the many customers they have developed for their cars.

Even Futaba had several boats on display in their booth as a trial to gather response on this phase of the hobby. As they are already running ads for the YS engine line they are marketing in the U.S., it doesn't seem unlikely that they would step into the growing boat market with a product that would tie in directly with their very popular line of radios.

The modeler who is interested in state-of-the-art, high performance electric should take a look at the products developed by Ed Hughey. The tunnel kit, twin and single motor system and drive train hardware are the ones used to hold the current speed records in the U.S. classes. Seeing one of these boats run is enough to make a believer out of the most anti-electric modeler in your club.

Scale modelers are going to be very pleased with the production of a unique model from the past. Thirty years ago, the Marx toy company produced several injection-molded boats for the plastic kit market. The largest was a 30-inch model of a 54-foot Chris Craft Constellation yacht, one of the largest in the extensive line by this popular full-scale boat maker. Even with the crude radios available at that time, this was a popular R/C model. Lindberg Hobbies, Inc., bought the mold several years ago and is now producing the model with updated instructions that show the use of modern

radios and drive trains. This model is a genuine classic and some of these boats can still be found in harbors, being lovingly cared for by proud owners. This kit should prove to be as popular as their PT 109 kit.

There were many other products on display and most reflected the continued sophistication of the hobby as it is today. I'll be giving you more of my views in future columns. Until then, I'd appreciate any comments you have on items I've covered so far or possible topics for the future.

Addresses of companies mentioned in this month's "Scuttlebutt" are as follows: Futaba Industries, 555 West Victoria St., Compton, California 90220; Hughey Boats, Inc., 6251 Coffman Road, P. O. Box 68328, Indianapolis, Indiana 46268; Lindberg Hobbies, Inc., 940 North Shore Dr., Lake Bluff, Illinois 60044; MRC, 2500 Woodbridge Ave., Edison, New Jersey 08817. •

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R/C Power . . . *Continued from page 31*

of "clout" for two individuals who were not on the Board of Directors.

Other concerns arose about the manner in which financial reports were handled, insurance policy information not being available, the overall appearance of the monthly newsletter, and comments made by the Executive Secretary in the newsletter. More than one club representative in my district complained that it was difficult to communicate with Mrs. Coad on matters related to the organization.

Yet to criticize Mrs. Coad was akin to trampling the flag into the ground, and denouncing "apple pie, hot dogs, and motherhood." And although many of us were not completely satisfied with the manner in which Mrs. Coad carried out the duties of Executive Secretary, it was easier to "play with the little pain" rather than "upset the applecart."

However, criticism of Mrs. Coad increased in July of 1986 at the NAMBA Board of Directors' meeting when NAMBA's Board of Directors voted to not accept the financial statement submitted by Mrs. Coad. In the next monthly newsletter, Mrs. Coad made a reference to Judy Prigley, District 9 (Northern California) Director, who made the motion to not accept the financial statement.

It was Judy Prigley's opinion that Mrs. Coad had taken a "cheap shot" in the newsletter. In response to the comment in the newsletter, Judy wrote a lengthy letter outlining case and point the problems she believed confronted all NAMBA members. The letter contained a number of stinging accusations regarding the performance of Mrs. Coad as NAMBA's Executive Secretary. I could not disagree with the content of Judy's letter.

In August of 1986, Harry Panchott, District 6 (Upper Midwest) Director, sent out a survey to the NAMBA District Directors asking their opinions on matters regarding the performance of the Executive Secretary. Only four directors responded to Harry's survey. Two director's voiced support for the

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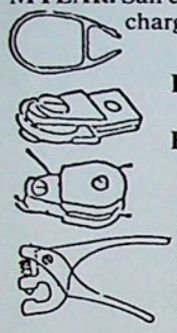

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Executive Secretary. Two director's (Judy Prigley and myself), expressed dissatisfaction with the performance of the Executive Secretary.

When Harry first released the results of his survey, he stated that 90 percent of the directors were satisfied. He took a "no response" to the survey to mean support. I made a phone call to Harry to explain "no response" does not mean support. Harry then re-released the results to show two responses in support of the Executive Secretary and two non-supportive responses. I could live with that summary.

All the letters and survey affirmed my belief it was time for a change in Executive Secretary of NAMBA. During numerous long distance phone calls between NAMBA President, Wally Stewart, Judy Prigley, and others, the feeling was the same. It was time to seek a new Executive Secretary. The question was, "How do we go about asking Mrs. Coad to resign?"

I suggested the best approach would be to simply write a letter to Mrs. Coad and ask for her resignation. I also offered to write the letter. After a considerable amount of deliberation on the format of the letter, I sent the letter, asking for Mrs. Coad's resignation in early October.

Near the end of October, Mrs. Coad responded to my letter. She rejected the request for her resignation and briefly stated her reasons. One of the reasons provided was her inability to find a suitable replacement.

After receiving Mrs. Coad's letter, I called a couple of model boat club leaders in my district and expressed my concern about continuing to be affiliated with NAMBA as long as Mrs. Coad remained as Executive Secretary. I suggested District 8 affiliate with the International Model Power Boat Association (IMPBA) in 1987 for insurance purposes. A majority of the District 8 clubs agreed to this. However, there were those in my district who were critical of my pulling out of NAMBA. I was also chastised for resigning as the 1987 NAMBA Nationals Director. This event was scheduled to be held in Olympia, Washington, in late July of this year.

In November of last year, Rod Geraghty, a club president in District 8 and designer of a record holding model outboard tunnel hull, contacted me to inquire whether I would be interested in talking with Mike Jones, the president of the American Power Boat Association (APBA). The APBA is the sanctioning and insuring organization for unlimited hydroplanes, offshore racing, limited classes, and outboard racing like OPC and stock and modified outboards. Rod was a personal friend of Mike, having raced against him in outboard classes in the early sixties.

In December, a meeting was held at Mike's C.P.A. office/boat shop in Kent, Washington. Mike was very interested in having a model boating division of the APBA. The APBA could provide all the service currently being handled by Mrs. Coad and offer some benefits only available from an organization the size and scope of the APBA. Mike Jones stated that the thrust of the APBA is, "If it races on water, the APBA is interested." To his way of thinking, race boats are race boats whether they are three feet or thirty feet in length.

I contacted IMPBA President, Gene Taylor, to inform him of this opportunity. For a variety of reasons, Gene said the IMPBA was not interested in merging into one national model boating organization under the APBA banner. While attending the Toledo R/C Show in April, I again attempted to discuss unification of NAMBA and the IMPBA. After some amount of stating my case, I was given little reason to believe this would be possible.

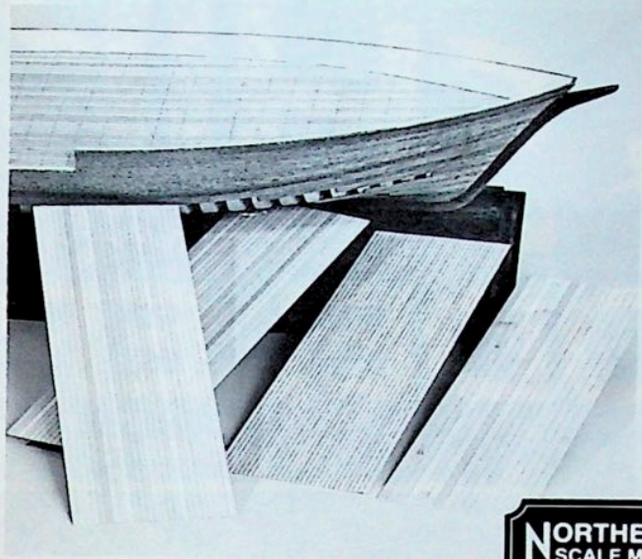
At the time this article is being submitted, the first of June, negotiations are continuing with the APBA to have a model boating division. The head of the APBA's insurance, Mike Weiner, of Cincinnati, Ohio, has looked at our insurance needs and does not see any problems in that area. It certainly seems like the people who can insure the unlimited hydroplanes would be able to insure model hydroplanes.

Mrs. Coad is 79 years of age. That fact alone is going to necessitate a need for NAMBA to access who will provide the services Mrs. Coad has provided since 1971. It is my opinion that affiliating with a recognized and respected racing organization like the America Power Boat Association can only serve to further the growth and development of model boating.

It can be a winning situation for everyone. •

Ski Boat . . . . . *Continued from page 37*

tion of the motor and propshaft without the cabin sides and front, it is recommended that this aspect of construction be completed before finishing the deck. In order to achieve some adjustment of the motor, I fabricated a very simple motor mount employing the Astro Flight 05 plastic marine mount, mounting angle flanges cut from a small plastic box, and 1/8 plywood for vertical mounts in the boat. The plastic angle



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flanges are screwed into the mounting flanges on the Astro Flight marine mount. This allows the motor mount to be mounted vertically rather than as a beam mount. Holes are drilled in the plastic mounting flange and plywood vertical mount. Bolt the plastic mount to the wooden mount attached to the bottom of the boat. The motor can now pivot to match up with the driveshaft. The photos of the motor mount show this type of installation.

The driveshaft is enclosed by a stuffing box. Locate the point on the plans where the stuffing box exits the hull. Drill a hole in the hull bottom for the stuffing box. It will also be necessary to drill a hole in Frame 3 to allow the stuffing box to get to the engine compartment between Frames 3 and 4. Make these holes sufficiently large to allow for ease of alignment between the motor and the propshaft. Position the stuffing box and shaft in the boat, insert the propshaft into the motor universal, and align motor and shaft so the motor and shaft turn freely. When motor and shaft align properly, use epoxy glue or fiberglass putty to attach the stuffing box to the boat.

COMPLETING THE DECK

The cabin sides are glued to the deck stringers. The cabin front pieces are glued to the cabin sides and to each other where they join at the center of the deck.

The 1/8 by 1/2 stringer material used for the radio compartment lid support is glued to the inside of the cabin. The radio compartment lid fits atop this support, and 4-40 bolts and blind nuts are used to hold the lid against the support pieces. Four bolts spaced equally along the sides and three bolts across the front and back will help assure a watertight radio compartment.

INSTALLING THE RADIO EQUIPMENT

The radio compartment of the 05 Ski Cruiser is more than adequate for mounting any of today's radio systems. It is suggested that the radio equipment be positioned between Frames 2 and 3, while the battery pack for the motor be placed at the back of the boat. Because an Airtronics Electronic Speed Controller was used on the 05 Ski Cruiser, it wasn't necessary to install a second servo for speed control. Speed control units can vary from servo-operated on/off micro switches, to servo-operated rheostats, to units like the Airtronics Controller that operate in place of a

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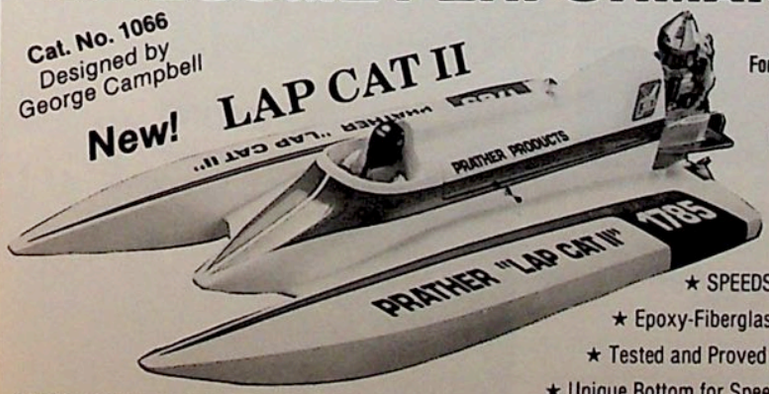

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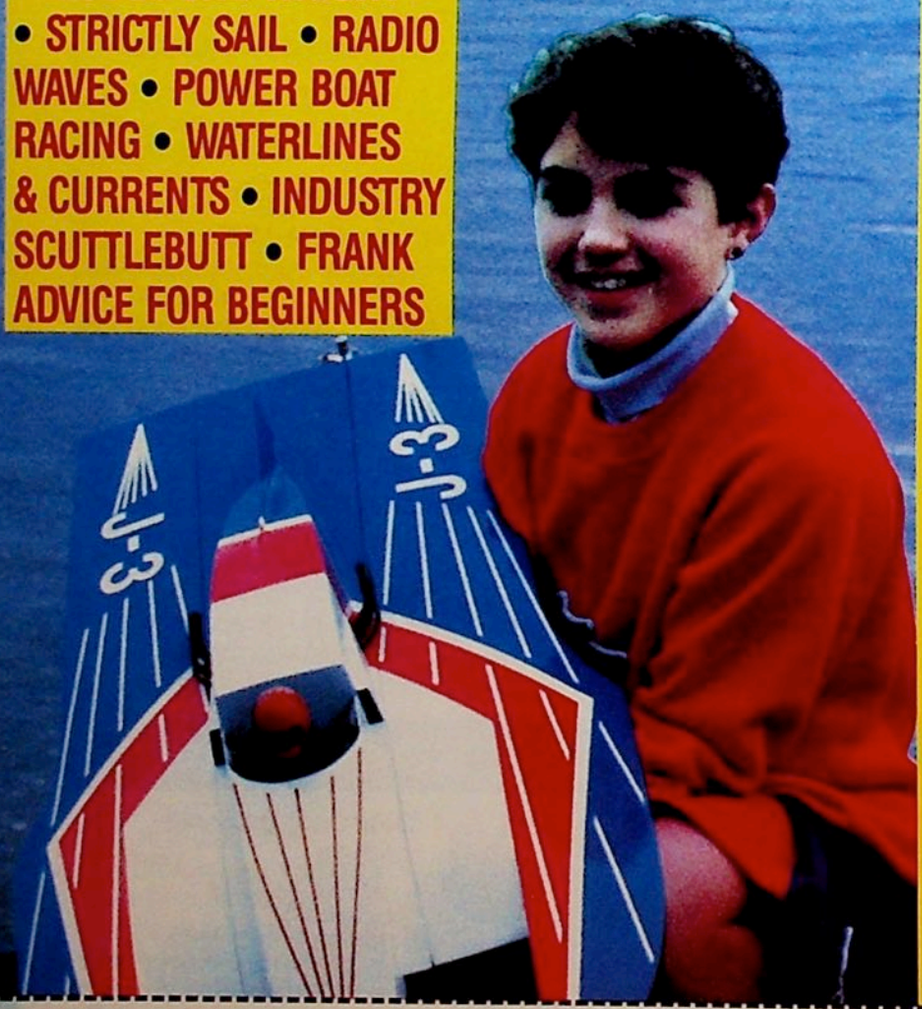

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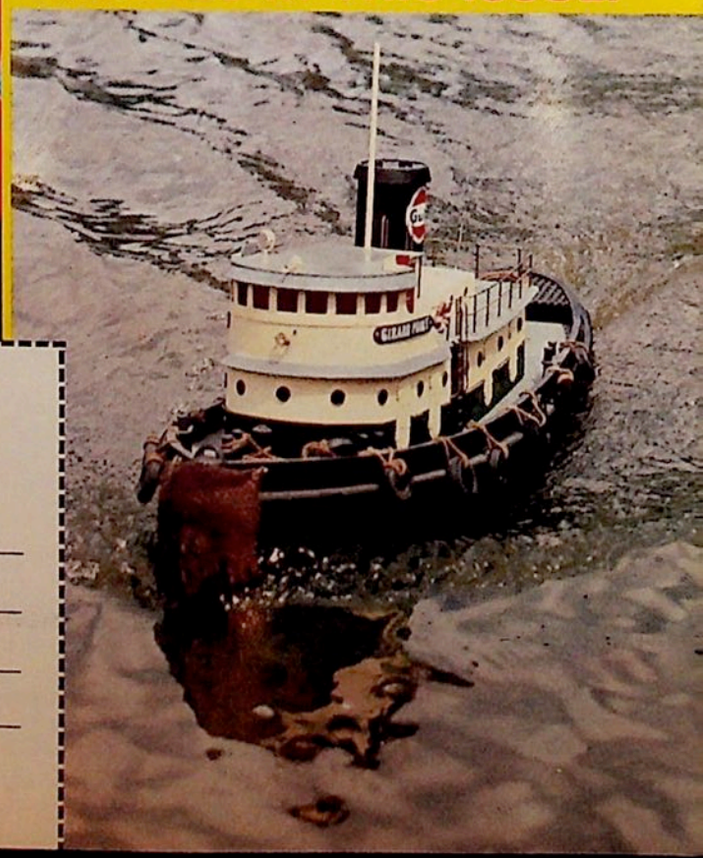

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servo to provide speed control. Servo mounting trays can be made from plywood for mounting the servos in the boat.

FINISHING THE 05 SKI CRUISER

Before painting the boat, install the bottom lift strakes to the hull. These little pieces of wood assist in allowing the boat to get up higher. The size and location of the lift strakes are shown on the plans.

Types of finishes for model boats are varied. Because there is no problem with damage to the paint due to nitro fuels, the types of finishes that can be used is increased. However, if a person is considering doing some racing, it is strongly recommended that a durable finish be applied.

The secret to a nice-looking finish on a model is preparation of the model for finishing. The boat should be sanded completely before any paint is applied and all holes and cracks filled with putty. Brushing or spraying on a primer coat will provide a good base for application of final colors. Sand the primer coat and again check the model for areas needing additional filling.

Both of my 05 Ski Cruisers were painted using K&B Super Poxy primer and paint. I've had excellent results with K&B Super Poxy paints and have used the product for years on all types of model boats.

OTHER HARDWARE

The basic hardware for the 05 Ski Cruiser is the same as for most model boats. Dumas makes a variety of items that can be used. Model Racing Products has complete hardware packages that they use with their boats that can be used with this boat. The hardware on my 05 Ski Cruiser consists of an Astro Flight propshaft connector, Dumas stuffing box and propshaft, homemade strut of plywood wrapped with Hot Stuff and fiberglass cloth, Model Racing Products' trim tabs, and a homemade rudder assembly consisting of model aircraft fittings and brass for the rudder shaft and blade.

Another very important aspect of hardware is the propellers for the boat. Jim Gale, of J.G. Products, graciously provided me with a variety of his props to try out. The one that seems to work the best with the stock 05 motors is the J.G. RA-1. For the person wishing to do some serious work with props for the 05 class, I would suggest contacting Jim Gale and getting a copy of the list of props he has available.

RUNNING THE 05 SKI CRUISER

There really isn't all that much to say about running this boat. Every time I've had it out, it's worked. Unlike my gas-powered boats, I've yet to have to row out to get the 05 Ski Cruiser because the engine quit.

The boat seems to be as fast as other electric boats similarly powered. I don't think it has any speed advantages over other boats, but it does have very scale appearing lines.

With the stock 05 motors retailing for under $25, I would estimate the speed around 15 to 18 mph on a seven-cell Ni-Cd motor pack. The boat could easily handle more speed. In fact, the boat would probably be a real mover with a .10-size glow engine. However, I have no immediate plans to build another for

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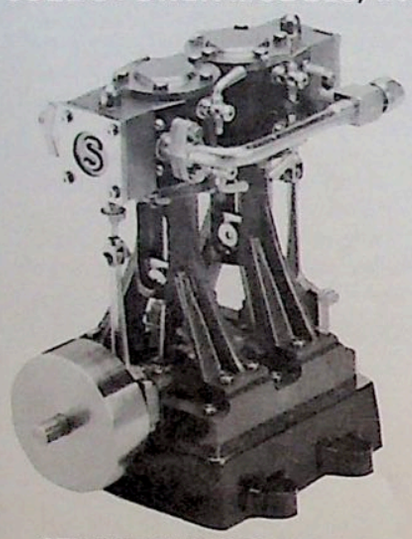

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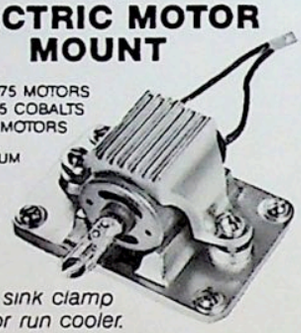

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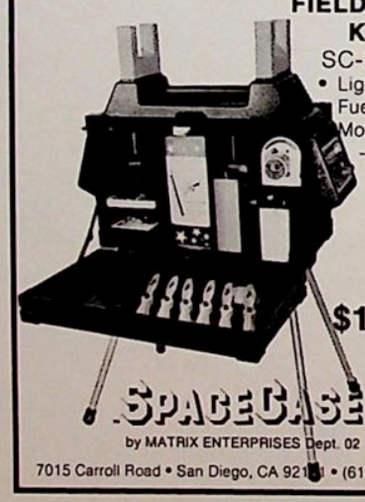

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a glow engine. I'm having a good time with the 05 Ski Cruiser and continuing to experiment with props. I can run this boat anytime I want and don't have to be concerned about its noise disturbing someone's afternoon nap or stroll around the lake.

In closing, I would like to thank Bob Boucher from Astro Flight for providing me with the excellent Astro Flight products that were used on the 05 Ski Cruiser. •

Shipwright . . *Continued from page 15*

modeler who made his *Mayflower* (1620) with all iron stropped blocks, and with hook fastenings yet!

Blocks and deadeyes can be made one at a time. Might I suggest, with the help of my friends, that you consider mass production. Working blocks can be made in one long loaf of bread like a hero sandwich. Spacers are apparent. The pins are fitted through predrilled holes through the sheeves and fixed in position. The score is cut into the top and bottom slices of our sandwich before the pins are placed. Now simply trim the crusts and shape the block.

You can use this application with the material of choice. Blocks of all sizes have been made this way out of metal, sheet plastic, using brass or wood sheeves. Blocks have even been made out of bone. I offer you, by way of example, the whale bone used by some old sailor-made models. Then there are the soup bones used in the famous prisoner-of-war ship models of the early and mid-1800s; museum pieces often imitated by today's ship modelers. The most favored materials from which blocks are constructed are wood blocks with commercially purchased sheeves incorporated in the design.

Let us assume that you need blocks for your model, but they don't have to be working blocks. Select a stick of hardwood ripped (sided dimension) to the size needed. Strange to say the harder the wood, the easier the work, and the better the results. You already knew that fact, didn't you? Getting on with it.

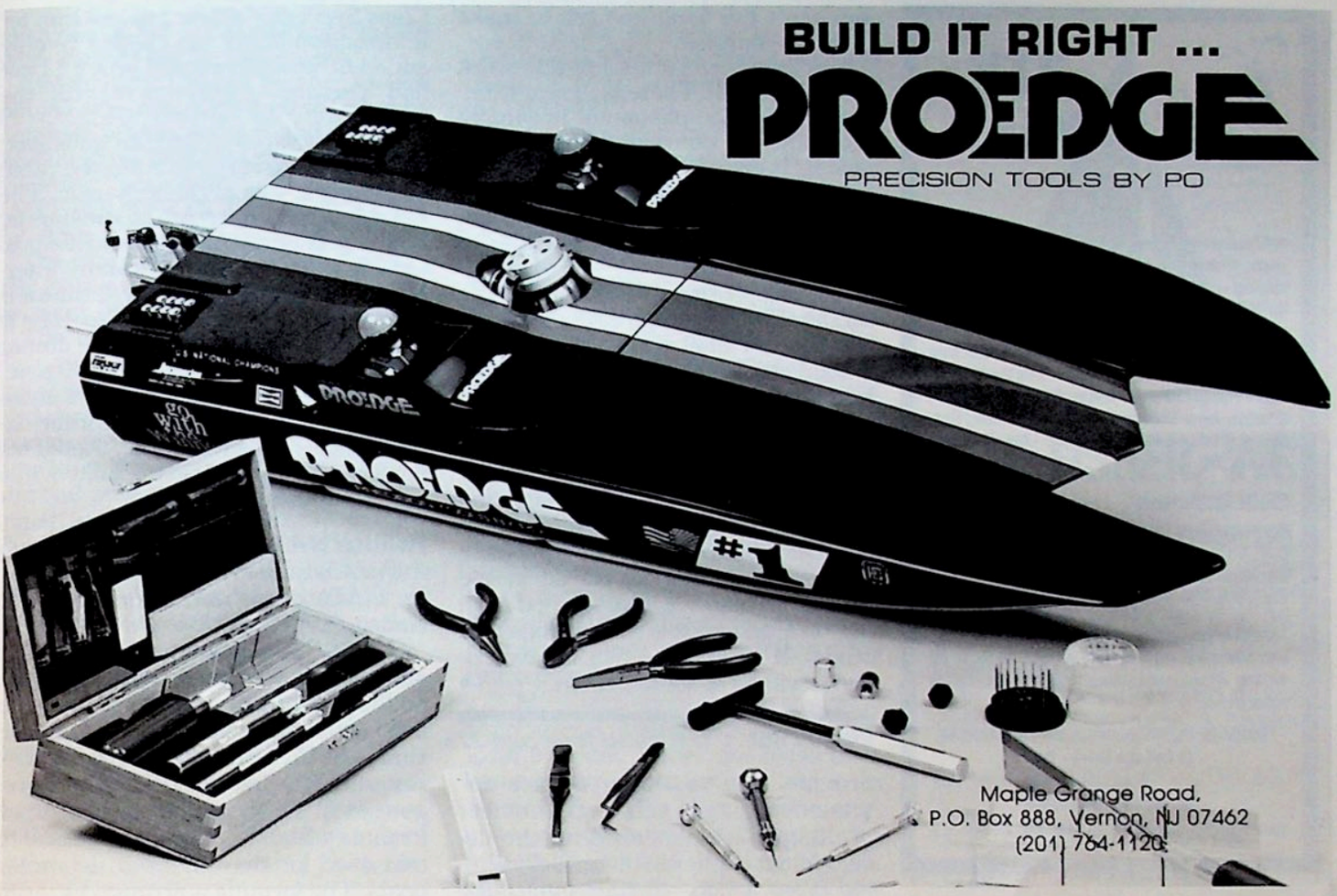
Mark off the lengths of each block. Leave a marked space for your saw kerf (cutoff). Indicate and drill the sheeve holes. Cut the score. Trim the shape, and slice them off. A touch of sandpaper and the block is ready for stropping and roving.

How about turning blocks on a lathe? You can use the method advocated by A. Richard Mansir. I let his drawings and your mind put that method together into a workable method. Watch your shapes and allow for drilling and cutoff.

Deadeyes are a must on the period sailing ships. They must all be the same size and, depending on the period, shape.

Round deadeyes can be turned on a lathe. Don't have one? How about making a jerry-built lathe? Take your power or hand drill and fasten it securely to the top of the bench, table, slab of plywood; whatever. You can design a clamp with your native mechanical ability. I know you can. An adjustable pointed dead center can be made for the other end. Make the distance about one foot; shorter is better. One end of the dowel goes on the drill chuck. The other end is held in the center. Use a dowel for your material. It should be the diameter of deadeye. Your shaping tool is a triangle file. Your cutoff is made after removal from your jerry-built lathe. Do your cutoff with a razor saw, preferably with a backing. No more talk, you have the idea.

Triangle-shaped deadeyes and/or hearts can be preshaped the length of the blank with a small hand plane. Prior to making any deadeyes by either the preshaped slice or the lathe-



turning method (round ones), drill the lanyard holes first. Perhaps you would like to make a jig and drill the holes after the cutoff. Jigs have been fashioned from a hinge-like contraption. The location of the holes is indicated in the top movable hinge. Drop in the deadeye blank and drill your holes through the closed jig. Use a pin through the first hole. This will keep the deadeye from turning when you drill the next two holes. Your choice.

The disadvantage of the short depth of the predrilled hole can be overcome in the following manner. You are, as you can imagine, limited in depth of hole to the length of the drill bit. I prefer to pre-drill my deadeye holes. I make a few, cutting them off as outlined above. Cut them off almost to the depth of the drilled holes and pre-drill again in the remaining stock. The pattern is there. All I have to do is take my drill and deepen the holes proceeding as mentioned. To each his own.

Wood carving is an old art form, and the varied designed tools should soon become part of your personal tool box. You can, if your desire is accomplishment and your goal is perfection, build your own model of a ship correctly. Most builders don't bother. They are content with "just getting by." After all, you are not honor bound to point out your mistakes or details of excellent workmanship. The details speak to the interested viewer.

Once again, don't forget the research. Rope strop blocks before 1650. The metal chainplates, backing links and the like, which we will explore at a later time, can be made of the ever-reliable brass. You will remember to either paint it or use a metal stain. They were black. For the sake of good modeling and accuracy, rig your model as the real ship.

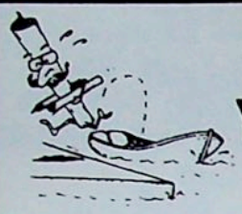
Other fittings can be made if unavailable commercially. Most cannon aboard later naval and privateer vessels were painted black. There is no regulation that says they have to be made of metal. Large scale models, those in scales where metal cannon cannot be found or bought, have, and can, use wood. The gentleman I speak of works in 1/24 and his *Norske Love*, the famous Swedish 100 gunner of 1765, all 13 feet of her (see the Premier Issue of *U.S. Boat & Ship Modeler*), made his guns of wood turned on a lathe. The carriages, which are wood, were no problem. The carvings, decorations, and scaled stanchions are left to your imagination. All the working blocks aboard are of wood with brass sheeves. As this is a working radio-controlled version, the word "working" is self-explanatory. He also made most of his own line and rigging cord.

Belaying pins can also be turned out on a lathe or shaped from a dowel. Stanchions, wood or metal, for the railings at the taffrail and companionways, are easily fashioned the same way.

Need some cleats, chocks, or mast tops? Anything that has to be made because it can't be secured at a commercial outlet will not be a problem if you let your imagination run free.

Cleats and chocks, as I hope you will envision, can be made from a preshaped piece of material. Incorporate the shape (end view) into the long piece of material, wood, plastic, or metal. The whole idea is similar to making blocks. We refer you to the illustrations. Gouges, files, special-shaped scrapers, and a little sweat will do the trick. When the strip is shaped to your satisfaction, the making can begin. Here we go again, slice off your bread from the pre-shaped loaf. Touch up with a shaper, sandpaper, file or scraper, and mount on your model. Simple when you think about it.

Hawse lips, portholes, doors, guns, and other deck fittings; any item for your model that can be shaped, molded, and made is not only a challenge but a grand satisfaction when complet-



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ed. Of course, if you are not up to challenges, there is a release for you. Secure the catalogs of the people who sell the products you require. Build your personal library of sources supply and information. Above all else, remember where you saw the information. You need not memorize everything. Secure what you need when you need it. Make it if you can't find it. Satisfy the wish to create above and beyond your ability. Learn to solve a problem without creating another. Perhaps all this is best summed up by the statement I read somewhere, "Learn from the mistakes of others. You can't live long enough to make them all yourself.'

It is the inventiveness of this work that is the thrill. There is a great satisfaction of accomplishment in solving problems of construction. Making models is creative and, above all else, thought stimulating. My wife calls it "psychosomatic sawdust." Sometimes, often, it keeps me on the sane side of living.

In future writings, we will dissect the sailing ship. As each area of the vessel is covered, I shall give some additional sources of research and learning. We haven't the space to complete the study in detail in one issue. If at all possible, I shall try to avoid the "continuing" serialized-type of writing. Perhaps now and again, along with a few hints and tips on construction, there could be a discussion of a certain type ship. Please request items of interest and advise me of your problems. I have learned from my own and mostly the mistakes of others. It is my hope that my experiences will be of some benefit. •

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Strictly Sail . . *Continued from page 27*

provide lots of opportunities for scratchbuilding. A substantial number of designs are published for the development classes in the model yachting press. I hope to start publishing them here too as we get settled down. A typical example, here in America, is the rapidly growing *Olympic One-Meter* Class. The size (39.38-inch Length Over All—LOA) makes it a good first boat for the novice. Recent winners have used homebuilt hulls of balsa planking with fiberglass reinforcement.

The ease of construction makes new boat design limited only by the time available for hull construction. As a result, progress is very rapid in the class with new boats coming out almost weekly. In my opinion, skippering skill will always be the most important parameter, nevertheless all formula classes are full of budding naval architects who think nothing of building two to four new boats a year as they search for a little less drag and a little more speed.

Figure 1 provides a descriptive arrangement of the Development Classes. Let's discuss each in the order that they appear in the figure. For further information contact the AMYA Class Secretary whose name, address, and phone number appears. Don't be disappointed if they are a little hard to contact. . .they would rather be sailing than manning the phones, just like you and me. In each case, I have used the materials that I gathered from the Class Secretary when I asked him for information about his class. I've only added other information when I have had personal experience with the Class.

As in any area of human endeavor, Class Secretaries vary from the rabid and hyperactive to the lethargic. The job earns no pay, requires substantial inputs of time and money, and leads to having your dinner continually interrupted. Please, consider what time it is at the Class Secretary's house. If he is liable to be sitting down at the dinner table, say between 5:30 and 7:30 p.m., let him get through his dessert and a cup of coffee. You'll get more information if he is relaxed and full, than if his dinner is going cold on his plate while talking to you!

INTERNATIONAL "A" CLASS

The Class Secretary is Byron Collier, 11579 Earnshaw, Overland Park, Kansas 66210; (913)469-8499.

The "A" Class currently consists of 45 members who have registered boats holding valid rating certificates. The most active clubs are found in Pennsylvania (AMYA Club #24), Illinois (#7), Kansas (#81), Indiana (#111), and Oregon (#45). The boats are rated using a formula which is virtually identical to that used for the full-sized, 12-meter boats. The formula is arranged so as to reduce the sail area as the boat gets longer on the waterline and capable of higher hull speed.

The Class Secretary does not know of any complete kits available for the boat, though Chevron Boat Co. used to produce the *Gem* designed by Bud Salika. Most A-Class skippers design and build their own yachts, or purchase a used yacht which is reworked as necessary. Plans for many designs are available, and a few sources of fiberglass hulls are in existence.

The following table gives an indication of the range of dimensions for the top five boats in the 1986 Annual Class Championship:

Place	LWL (in.)	Beam (in.)	Displ. (lb.)	Sail Area (sq. in.)
1	43.3	8.1	22.68	1669
2	49.9	11.4	39.50	1569
3	50.5	14.5	50.25	1805
4	54.2	14.0	53.50	1597
5	56.5	14.1	54.00	1413

A flood of new concepts are on the drawing boards of present-day designers. John Oettinger of Portland, Oregon, continues his successful *Nova* series. Bob Sterne of Vancouver, B.C., Canada, is working on an *Orca III* with carbon fiber/kevlar hull. Adrian Brewer of Australia is having good success with his *Blurred Image* and his countryman, Frank Russell has recently published *Trolley Jack* and finished a new design called *Alien*. Of course, the En-

glish designers are exploring the rule with their usual thoroughness.

My thanks to Byron for the A-Class photos which he provided for us. The contrast between them and the little 36/600 show that you can have model yachting "your way."

INTERNATIONAL 10-RATER CLASS

The Class Secretary is Fritz Larson, 103 Putnam Road, New Canaan, Connecticut 06840; (203)966-3107.

The 10-Rater Class is perhaps the oldest class of model yacht still being sailed today. It is celebrating its 100th birthday this year. First developed in Europe in 1887, it is a result of the relationships between water line length and sail area being recognized. Combined with weight or displacement, these three variables need to be interrelated in order that model yachts with comparable sailing potential, yet of different sizes, could be raced together with reasonable fairness to all competitors. This situation led to the development of the class rating rule. The present 10-Rater formula is: Length Water Line x Sail Area/7500 = 10. It is apparent that the rule permits model yachts of variable lengths to race as 10-Raters, providing that they control their sail area to comply with the formula.

Most modern 10-Raters are approximately a 60- to 65-inch Length Over All (LOA) with about a 45-inch LWL. When heeled by the wind, they rapidly pick up sailing length, which adds to their speed and stability. Marblehead class yachts are often sailed as 10-Raters and, in fact, are competitive with the current boats in the class. The "M's" are equipped with sails of about 1500 square inches and a heavier keel weight.

There are a modest number of 10-Raters in the U.S., mostly clustered in New York City and Toronto, with a few on the West Coast. More than 300 boats have been registered since AMYA was founded in 1970, but the centennial year class population is less than one quarter of that.

Since the 10-Rater is an open design, there are no standard kits available. New boats are constantly being designed and are available from a variety of sources. Special purpose boats, such as the *Infinity 54*, are well suited to conversion to 10-Rater Class racing.

Carrying such a large amount of sail on a long overhang hull produces a sleek appearing boat, and many people consider the 10-Rater to be the best looking of all model yachts.

INTERNATIONAL "M" CLASS (Marblehead)

The Class Secretary is Standley Goodwin, 33 Norman Street, Marblehead, Massachusetts 01945; (617)631-5847.

The Class Secretary tell us: "The 'M' Class is the largest class in AMYA and, for that matter, the world. Its principle features are a 50-inch long hull and 800 square inches of sail area. The result is the largest high-performance sailing model that easily fits into the normal American automobile. Its size, reasonable weight (10 to 14 pounds), and performance have made it a very popular class. It sails well in conditions from flat calm to 30 miles per hour. In winds above 12 mph, many of the better designs plane, adding additional excitement to sailing.

"The class is active throughout North American, with fleets located around most major cities. Divisional and national championships are held every year. In most areas, a local circuit is available for those who prefer a more relaxed style of sailing.

"'M' Class models are available from several manufacturers and a few local builders. Prices are reasonable and competitive with other classes. As a newcomer to the class, you can purchase a used model, build one from a kit, or design and build your own. Overall cost is mainly a function of how much you build and how much you buy.

"The 'M' Class is a high-performance model with competition available in most areas. If you are thinking of entering model sailing, look into the 'M' Class. You will like what you find."

"J" CLASS

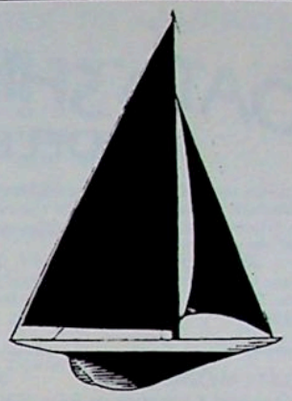
The Class Secretary is Ralph McCafferty, 107 Armstrong Ave., Wilmington, Delaware 19805; (302) 995-6830.

A fairly recent issue of the AMYA Quarterly devoted a major article to the "J" Class. In summary, the boats are 3/4-inch to 1-foot scale models of the mighty "J" Class of sloops that raced for the America's Cup in the 1930's. As the Library at Mystic Seaport in Connecticut has hull lines available for the boats, most J's are scratch-built. The boats are large, averaging 7 feet long with 8-foot tall masts. Displacement is in the range of 70 pounds, and the ballast is usually made removable in several pieces to reduce the strain on the skipper.

Fiberglass hulls of the *Whirlwind*, designed by Francis Herreshoff, were manufactured in the 1970's, but I am not sure that they are still being turned out. Ask the Class Secretary. Active fleets of J's are found in the Long Island Sound vicinity. I would estimate that there are approximately 40 to 50 of the boats registered with the class.

OLYMPIC ONE-METER CLASS

The Class Secretary is Bob Debow, 4415 Longbranch Ave., San Diego,



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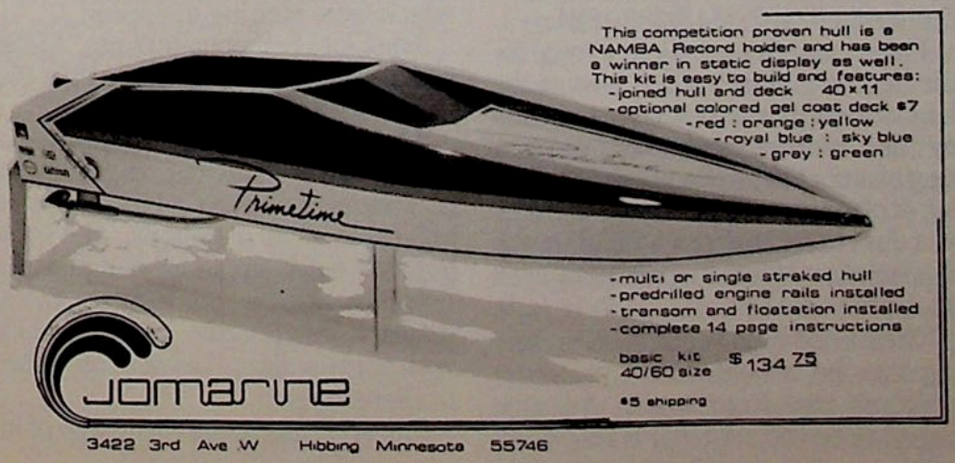

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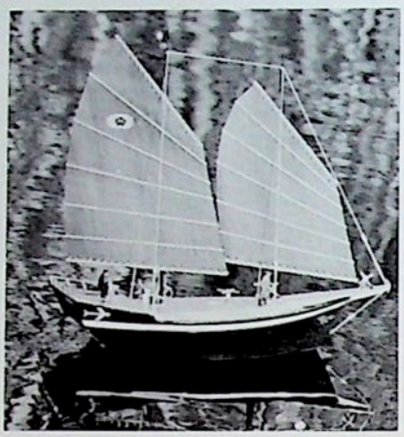

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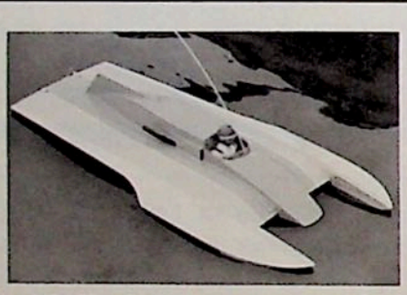

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All wood, 37" LOA, R/C tugboat with electric drive, bow thrusters, and device to retrieve other boats. Francis Smith.

California 92107; (619)222-1991.

This class is an excellent choice for the beginner. The main reason is the fantastic support provided to the class by the Class Secretary and his close ring of associates in San Diego. A catalog of plans is available as well as excellent directions for scratch-building any of a number of hulls which have been designed.

The fin and bulb keels do best if sailing can be accomplished on water which is free from weeds, but that seems to be the only major shortcoming and would be true for any bulb-keeled boat. The length of the fin/bulb below the boat is limited, and the maximum sail area allowed is 600 square inches. The class has been notable for the free exchange of hull lines and sail rig information. Full-sized hull stations have been published in the AMYA Quarterly. Even computer-aided design of boats has started and been freely shared with all comers. This wide-open interchange of ideas is the main reason the class is growing so rapidly, at the expense of others I might add.

36/600 CLASS

The Class Secretary is Glenn Raub, 810 East Meadowbrook Ave., Space # A-7, Phoenix, Arizona 85014; (602) 277-4278.

This class was one of the first AMYA classes to gain class status. It represented a typical American approach to developing a boat which would fit in the newer, smaller cars which were starting to appear.

The Class Secretary tells us: "At the end of 1986, there were better than 400 registered boats in the class."

The average weight of the 36/600 (a boat which is 36 inches long and has a maximum sail area of 600 square inches) is about 7 pounds. The most popular sails are in Mylar and are made by Amen and Black. Typical mainsail luff lengths are 60 inches, with storm sails cut down to 55 inches or thereabouts.

Currently a substantial number of kit boats and hulls are available for the class. Some of the more popular are: *Amen 36*, Amen Design Group, Petaluma, California; *Skamp I Mark IV*, Ozmun Design, Huron, Ohio; *Huson 36*, Dumas Boats, Tucson, Arizona; *Victor 36*, Victor Model Products, Downey, California; *Tradewinds*, Tower Hobbies, Illinois.

The class is about equally split between scratch-built and kit-built boats. Their portability and ease of transportation are a major reason for their popularity.

My thanks to Glenn Raub for the excellent pictures he provided of the 1986 36/600 ACCR held in Scottsdale, Arizona, last year. Doesn't that sunshine look inviting?

36/600 MULTI-HULL CLASS

The Class Secretary is John Ulrich, 2733 Shelter Island Dr., Suite 131, San Diego, California 92106; (619) 291-0743.

He tells us: "The Multihull Class was formed in 1986 as a split-off from the 36/600 mono-hull class. Don Prough (AMYA #3) was the instigator of the idea and as of now we have 30 registered members and inquiries are increasing. The class specificiations are quite simple and few: 1) 36-inch hulls Over All Length (OAL), maximum; 2) 600-square inch sails, maximum; 3) Roach unrestricted; 4) Sail number visible at 100 feet.

"This is definitely an open class and many novel ideas are being tried, but the overall name of the game seems to be 'lighter is better.'"

OPEN CLASS

The Class Secretary is Eugene Salika, 3917 Sunnyside Ave., Brookfield, Illinois 60513; (312)485-5712.

The Open Class serves two basic functions. First, it provides a haven for the registration of boats that are one-of-a-kind. Sail numbers can be assigned, and the skipper has the benefit of AMYA membership and an AMYA

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RCMB Publications is looking for someone to assist in the production of three magazines. The qualifications necessary include a command of the English language, a knowledge of magazine production, including layout, paste-up, ad production, and proofing. Position offers the opportunity for the successful candidate to grow with the company in an atmosphere of close cooperation and a rewarding future. Experience in model building is a plus for the position. Send application and resume to Wm. C. Northrop, RCMB Publications, 898 West 16th St., Newport Beach, CA 92663.

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sail number to wear on his unique vessel.

The second function is as a holding point for new classes which are trying to register the 20-boat minimum necessary for becoming an AMYA-Sanctioned Class with its own Class Secretary. One of the reasons AMYA was formed was to provide a simple, straightforward procedure for any group to develop its own class of boat with the direct assistance of the national organization.

OTHER CLASSES

Other formula classes have appeared from time to time, such as the 36UR (a 36-inch hull, unrestricted sail area approach), the "X" Class (1000 sq. in. max. sail area, no limit on hull), and the "V" Class (600 sq. in. max. sail area). Each served some special need, and, as the concept was of a specialized nature, they, in general, developed fairly short-lived and localized followings.

EPILOGUE

Next issue we will get involved with the one-design classes. Here a premium is placed on careful preparation and maintenance of your boat, as well as insightful handling of the boat on the race course. The winner in one-designs is often the skipper who makes the least mistakes.

This column is hungry for photographs of all classes of racing yachts, as well as those special one-of-a-kinds that are being built out there. If you want to see your project in print, send it to me, and I can practically guarantee that it will appear in these pages. Photos of boats under construction are especially helpful. Send them to Rod Carr, 3011-177th Ave., NE, Redmond, Washington 98052.

While you have your stamps and envelopes out, send your annual AMYA dues of $20 to Pat Hein, AMYA Secretary, 1884 Campus Court, Rochester Hills, Michigan 48063. •

Cap'n's Log . . . *Continued from page 9*

body of water that, using a golfer's estimate of distance, is about 70 yards wide by about 250 yards long, and surrounded by a close-cropped grassy shoreline. The elliptical-shaped pond is fed by an underground pipeline from Mission Bay by means of a control valve, which is opened now and then to compensate for evaporation and seepage loss. The same body of water will host the 1987 NAMBA Championships (which will be over by the time you read this). Yes, it is as salty as the Pacific Ocean that keeps it filled!

Just as with the Ship Modelers Association, we plan to present a more thorough story about the Guild in a future issue. For now, we just wanted you to see some of the fine models that were in action at the Regatta.

WELL-DESERVED PLUG

Just before the Toledo R/C Expo show in April, Ed Rogala, of Midwest Products Co., sent us a sample kit from the company's new line of wooden scale boats. Many boat modelers will immediately recognize the fact that these designs come from Ted Stinson's "Laughing Whale" line. True enough, but there is one "whale" of a big difference between the new Midwest kits and the old Stinson kits. To put it most kindly, Ted's kits were strictly for the expert model ship builder who knew exactly what to do and how to build a model from a plan and some odds and ends of wood scrap, without detailed instructions.

The kit Ed sent is for a one-inch scale dinghy. Sure, it's just a little 10-inch long rowboat, and the total amount of wood in the kit could be mistaken for a couple of oversize tongue depressors and a dozen shishkabob sticks, but the *instructions*. . .you have to *see* the *instructions*! In reality, the kit is a 24-page primer on the basics of wooden model boat building, accompanied by a full-size plan and those pieces of wood, so you can act out the instructions as you read and study them. Actually, the shishkabob sticks are all precisely cut strips of basswood, and the "tongue depressors" are accurately and cleanly die-cut sheets of basswood and mahogany.

At Toledo, I ran into Ed Rogala and Don Sobbe in the Midwest booth, and complimented them on the excellent quality of the kit, and pretty much said it as above. . .outstanding instructions. That turned out to be a home run in diplomacy, as Don actually is the one who is writing all the instructions for the Midwest kits!

The first two pages describe and even illustrate the tools and materials needed to build the model. Next there is a list of the kit contents, including drawings of the die-cut sheets, naming each piece. In effect, it's an illustrated glossary of common wooden boat parts; garboard planks, frames, skeg, knee, stem, quarter knee, and breasthook.

The actual building instructions are numbered step-by-step, and, in addition to telling you what to do, you are also told *why* you do it. By the time you have completed the dinghy, you will have followed 102 steps, and, believe me, you'll be well prepared for some of the more complicated boats in the beginner series.

Incidentally, Midwest has labeled this as one of its "Success Series" kits, meaning that with the step-by-step instructions and the full-size plans, you are assured success in building the model. We wholeheartedly agree!

Midwest also produces basswood, walnut, and mahogany sheets and strips for scratch builders of model boats and ships. Send $2.00 for the complete Midwest Products Co. boat catalog, to 400 S. Indiana St., P.O. Box 564, Hobart, Indiana 46342, or phone (219) 942-1134.

POACHED LOBSTER

Expert aircraft and boat modeler, Don Typond, found an interesting new model boating competition activity written up in a recent issue of *Sea Heritage News*. It's called "Poacher," apparently originated by modelers at

INDEX TO ADVERTISERS

Ace Radio Control 23
A.J. Fisher Inc. 77
Airtronics Inc. 3
Altech Marketing . . . . . Cover 2
Astro Flight, Inc. 61

Beemer R/C West Dist., Inc. 53

Carl Goldberg Models, Inc. 1
Chicago Model & Hobby Show 63
Cole's Power Models 74

Dagger Boat Works 74

Futaba Corp. of America 5

Hartman Fibreglass R/C 60
Hobby Lobby Intl. . . . . Cover 3

International Hobbies 69
International Modeler Show (IMS) 39

Jomarine 76
J'Tec 74

K&B Manufacturing 4
K&S Engineering 59

M.A.C.K. Products Model Marine . . . 69
Matrix Enterprises Inc.. 74
Model Racing Products (MRP) 25
Model Rectifier Corp. (MRC). . . Cover 4

Northeastern Scale Models, Inc. 71

Octura Models 73

Pinckert Custom Boats 68
Polk's Model Craft Hobbies. 65
Pop Up Mfg. Co. 70
Prather Products 71
Proedge 75

R/C Buyers' Guide 62
Radio Boat 63
Radio Controlled Models (RAM). . . . 60

Satellite City 55

Taubman Plans Service Intl. 76
The Dromedary 73

Uber Skiver Knives 80

HOUSE ADS

Full Size Plans Service 78
Model Builder Subscriptions 47
U.S. Boat & Ship Modeler Subs. 72

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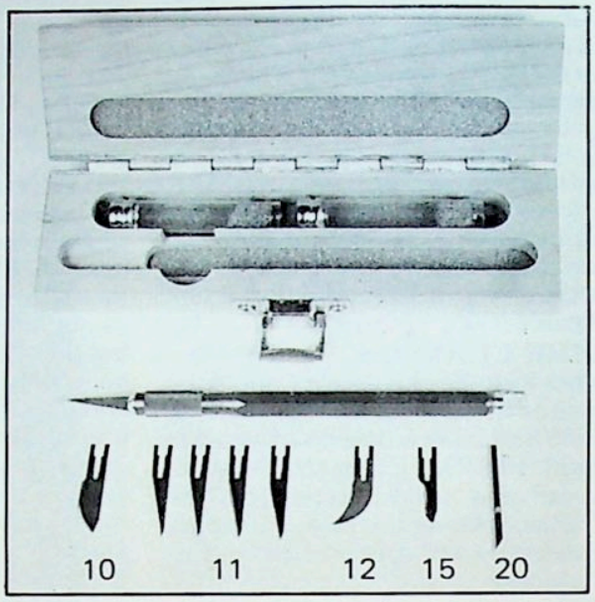

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New York City's model sailboat lake in Central Park, and is based on "the time-honored traditional disreputable enterprise of poaching (stealing) lobsters from other people's lobster pots." The idea was inspired by the "Laughing Whale" kit for a 31-inch Muscongus Bay Lobster Smack, a predecessor to the Friendship Sloop, which you'll find as part of our "Cap'n's Log" logo. Radio control is used to operate rudder and sails.

To perform a successful "poach," you must make contact with your opponent's lobster pot buoy with your boat. The buoy is a balloon or plastic bottle anchored by a weight.

The rules of "Poacher" are based on the conclusions that (1) all poachers are bad guys, (2) they have no rights, and (3) they must always give way to the defenders. Obviously, standard boating rules do not apply; i.e., a defender can aim his boat at a poacher and the poacher must change his course regardless of his port/starboard or windward/leeward position.

The "game" takes a minimum of two boats and one buoy. The "poacher" tries to hit the buoy within a fixed time period. If he's not able, the defender wins. In a two-buoy game, each team must defend its own buoy and also try to score against the opponent. . . the scoring is the same as in hockey or basketball.

All of the boats used in "Poacher" must be the same in hull and rigging. Although the New York group has settled on the Laughing Whale kit for the Muscongus Bay Lobster Smack, other suitable designs could be adopted, but the Lobster Smack seems most appropriate.

We can't possibly imagine there ever being a "National Muscongus Bay Lobster Smack Poaching Association" with regional eliminations and a yearly National "Poach Off," but it sure sounds like fun for local model boating groups. Hmmmm. . . anyone for a little game of Harbor Tug-of-War?

TALENT HUNT

We invite readers of *US BOAT & SHIP Modeler* who would be interested in becoming involved in our publication to make contact.

(1) If you have a model boat of your own design, scale or otherwise, operational power or sail, with or without R/C, or for static display; if you are interested in offering a how-to article on some phase of construction or operation of model boats and/or ships, please feel free to submit information on the project to us. The more thorough the information, the better we can determine if your material can be used.

(2) We are also in need of boat modelers who would like to build, photograph, and write reviews on various kits and model boat products for our "Product Survey" service. Some boat kits can obviously take fairly long periods of time to complete, but it is important to consider how much time you can spend on such a project in order to get it in print as soon as is reasonably possible.

(3) In connection with Item 1 above, we would also like to make contact with capable, nautical-oriented draftsmen, preferably someone in the Southern California area, who would be interested in making final drawings from construction plans submitted for publication. In most cases, designers provide pencil-on-paper plans which need to be rearranged and redrawn in order to make them suitable for publication and for reproduction as full-size plan prints for readers to purchase through the magazine.

(4) For any of the above work, payment is involved. There are no set payment schedules for published work, as there are too many variables; however, an approximate figure will be determined prior to scheduling any material for publication. Payment is normally made a few weeks after the date of publication of the material. •

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Radio Control Offshore Racing Boat

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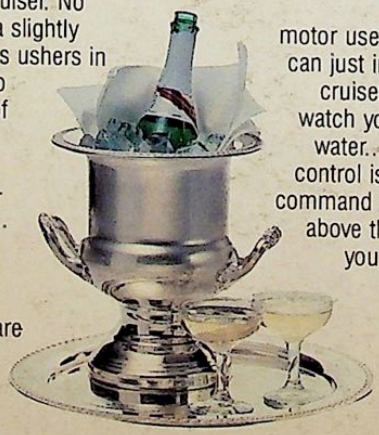

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